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INDEX.

Index of Original Articles and Clinical Memoranda for the year 1908.

PAGE

ADAMS, P. H.—The connection between inflammation of the parotid glands and iritis 83
BARDSLEY, P. C.—A new scotometer: together with the description of a case where it was found of service 867
BUCHANAN, LESLIE—Mirror writing: with notes of a case 156
BURT, J. BARNES—Acute iritis in rheumatoid arthritis 11
BUTLER, T. HARRISON—An Albino family 589
———————An improved spectacle diagram 495
COLLINS, E. TREACHER. Developmental deformities of the crystalline lens... 577, 663
de SILVA, W. H.—Lepra ophthalmica in Ceylon 70
DEUTSCHMANN, PROF. R.—On serum-therapy in diseases of the eye 940
DOYNE, ROBT. W.—A case of glaucoma treated by Lagrange's operation of sclerecto-iridectomy 416
DIXEY, W. A.—Some new forms of bifocal lenses 19
DODD, H. WORK.—Bilateral congenital temporal hair islets, accessory eyebrows 77
DUNN, PERCY.—A monocular method of the correction of ametropia. 82
EVANS, J. HOWELL.—The applied topographical anatomy of the sinuses accessory to the nasal cavities in their relation to the orbit and to its more important contents 259
EVANS, J. JAMESON.—The construction, technique, and theory of Rémy's diploscope 954
———————The ocular and orbital complications of disease of the accessory nasal sinuses... 235
FARID, NASI.—Indications for iridectomy in irido-choroiditis 347
FISH, HENRY MANNING.—A study of thirty-six consecutive cases of optic neuritis 243, 400
FUCHS, ERNST.—Glaucoma in consequence of cicatrix of the cornea with anterior synechia (leucoma adhærens) 742
GALLOWAY, A. RUDOLF.—Three cases of serious visual deficiency affecting responsible employés in the marine and railway services ... 159
———————Five additional cases of serious visual deficiency affecting responsible employés in the marine and railway services 344
GARROW, ALEXANDER.—On the treatment of squint in adults without operation ... 485
GOWERS, SIR WM. R.—The mechanism of nystagmus... 412
GREY-EDWARDS, H.—On the use of staphylococcic vaccine in the treatment of hypopyon-ulcer 79
HENDERSON, THOMSON.—Anatomical factors in the pathogenesis of glaucoma ... 746
HERBERT, LIEUT.-COL. H.—Adrenalin with cocain in cataract extraction 163
———————Operations for filtering cicatrices 483
HORSLEY, SIR VICTOR.—The operative treatment of optic neuritis 658
MACCALLAN, A. F.—Ophthalmic conditions in the Government schools in Egypt and their amelioration 856, 947
MACTIER, H. CARTER.—Ophthalmia neonatorum. Synonym: blennorrhœa neonatorum 2
MADDOX, ERNEST E.—A note on anti-staphylococcic vaccine 414
MASSEY, A. YALE.—A case of persistent capsulo-pupillary membrane in both eyes 866
MAYNARD, LIEUT.-COLONEL F. P.—A note on the seasonal prevalence of acute glaucoma 864

PAGE

MAYOU, STEPHEN.—Some staphylococcal infections of the eyes and their treatment with vaccine 566
MENZIES, J. ACWORTH.—Vascular membrane in vitreous 164
OLIVER, CHARLES A.—A brief note upon the value of the ophthalmo-tuberculin test in the question of surgical treatment of orbital disease 952
PERCIVAL, A. S.—Some prismatic effects of lenses 15
RADCLIFFE, MCCLUNEY.—Thyroid extract in keratitis... 676
Report of the Committee on ophthalmia neonatorum of the American Medical Association held June 2nd to 5th, 1908 427
STEPHENSON, SYDNEY.—A case of incomplete congenital ophthalmoplegia externa : with remarks 678
———————A case of persistent capsulo-pupillary membrane and atypical development in the vitreous 347
———————Associated movements of upper eyelid and jaw 22
———————Malignant diseases of the accessory sinuses : notes of three cases 253
———————On a little known type of amblyopia in children 584
THOMSON, ERNEST.—A note regarding the alleged diminution of ophthalmia neonatorum 8
———————Is Calmette's ophthalmo-reaction free from danger ? 489
THOMSON, ST. CLAIR.—The frequency of orbital manifestations of nasal sinusitis ... 228
WRAY, CHARLES.—Ptosis treated by cautery 767

REVIEWS.

BUTLER, T. HARRISON.—The lymph circulation of the eye and the genesis of glaucoma 418
DIXEY, W. A.—Some recent British work upon standardisation 686
GRIMSDALE, HAROLD.—Some of the newer operations upon the eye and its appendages 875
HAY, PERCIVAL J.—The present position of vaccine and serum diagnosis and treatment in eye diseases 496
STEPHENSON, SYDNEY.—Some of the newer remedies in eye work : a review 598, 776
———————The rôle of the pneumococcus in ocular infections : a review 165
———————Transillumination of the eye : a review 959
THOMSON, ERNEST.—Some recent British work on ophthalmia neonatorum 350
———————The question of the so-called "filtering cicatrix : " A review of some recent work on the surgical treatment of glaucoma 84

TRANSLATIONS.

AXENFELD, Professor TH.—The share of the ophthalmic surgeon in the operative treatment of the accessory sinuses of the orbit (translated by Percival J. Hay)... 888
BACH, Professor L.—The general pathology of the pupil (translated by T. Harrison Butler) 513
CALDERARO, Dr.—A method of obtaining serial sections of eyes embedded in celloidin (translated by Harold G. Grimsdale) 426
KRAILSHEIMER, Dr.—A case of Mikulicz's disease with pronounced tubercle of the iris (translated by Percival G. Hay) 172

PAGE

LAGRANGE, FELIX.—On simple sclerectomy in chronic simple glaucoma (translated by Sydney Stephenson) 770

———————On the filtering cicatrix in the cure of glaucoma (translated by Sydney Stephenson) 363

PFLUGK, DR. V.—The treatment of incipient cataract with potassium iodide (translated by Rosa Ford) 593

TEILLAIS, Dr.—Empyema of the maxillary antrum followed by orbital cellulitis and atrophy of the optic nerve of the same side and sympathetic ophthalmitis (abridged translation by Percival J. Hay) 271

TSCHERNING, M.—Bifocal lenses (translated by J. Jameson Evans) 691

WEIL, G.—On operations for after-cataract (translated by T. Harrison Butler) ... 970

WOLFF, BRUNO.—Injuries to the eyes of the child during labour (continued from previous volume) (translated by Rosa Ford) 23, 88

BOOK NOTICES.

Aids to Ophthalmology. (BISHOP HARMAN), 1908 467

Atlas der Aetiologischen und Experimentellen Syphilisforschung (HOFFMANN), Berlin, 1908 136

Atlas of Rare Ophthalmoscopic Conditions and Supplementary Plates to the Atlas of Ophthalmology (J. OELLER). Part VI. The text translated into English by T. Snowball, Weisbaden, 1908 1015

Atlas und Grundriss der Ophthalmoscopie und Ophthalmoscopischen Diagnostik. (HAAB). (Atlas and epitome of Ophthalmoscopy and Ophthalmoscopic Diagnosis). 5th edit. Munich, 1908 557

Avis au Peuple sur la Conservation de la Vue, et sur les Moyens de la Retablir. (Advice to the public on the preservation of sight and upon the means of restoring it when impaired). (COULOMB), Montpellier, 1908 847

Bacteriology of the Eye. (AXENFELD). Translated by ANGUS MACNAB, 1908 ... 926

Bericht ueber die Vierundreissigste Versammlung der Ophthalmologischen Gesellschaft Heidelberg, 1907, Wiesbaden, 1908 336

Bulletin de la Société Belge d'Ophtalmologie. No. 24 Bruxelles, 1908 349

Bulletins et Mémories de la Société Française d'Ophtalmologie. Paris, 1907 ... 140

Cataract Extraction. (HERBERT), London, 1908 849

De la Sensibilité Cornéenne. (On the Corneal Sensibility). (CERISE). Paris, 1908 1014

Der Sehnerv und die Nebenhöhlen der Nase. (The Optic Nerve and the Accessory Nasal Sinuses). (ONODI). Wien und Leipzig, 1907 337

Development of Ophthalmology in America, 1800 to 1870: A Contribution to Ophthalmic History and Biography. (HUBBELL). Chicago, 1908 725

Die Angeborenen, Fehler und Erkrankungen des Auges (Congenital Anomalies and Diseases of the Eye). (PETERS). Bonn, 1909 930

Die Krankheiten der Orbita. (The Diseases of the Orbit). (BIRCH-HIRSCHFELD), Leipzig, 1907 339

Die Pathologische Anatomie des Auges. (The Pathological Anatomy of the Eye). (GREEFF). Berlin, 1902-1906 144

Die Photographie des Augenhintergrundes. (Photography of the Fundus Oculi.) (DIMMER). Wiesbaden, 1907 140

Diseases of the Eye (MAYOU), 1908 1012

Einblicke in die Embryonale Anatomie und Entwicklung des Menschenauges nach eigenen Präparaten dargestellt von Prof. Dr. O. Lange, mit einem Atlas von 33 Tafeln. (An outline of the Embryonal Anatomy and Development of the Human Eye, according to preparations by Dr. O. LANGE), Wiesbaden, 1908 ... 1011

Einführung in die Pflege von Augenkranken. (An introduction to Ophthalmic Nursing.) (GOERING), Wiesbaden, 1907 927

PAGE

Encyclopédie française d'ophtalmologie. (LEGRANGE ET VALUDE). Tome VII. Paris, 1908 214
Extra Pharmacopœia of Martindale and Westcott, 13th edition. 1908. 728
Formulario ragionato di Oculistica: vade-mecum di terapeutica oculare ad uso dei medici practici. (TROMBETTA), Turin, 1907. A vade-mecum of Ocular Therapeutics for the use of Medical Practitioners 138
Guide du Médecin oculiste dans les Accidents de Travail. (CAILLAUD), Paris, 1908 650
Gynäkologie und Geburtshilfe in ihren Beziehungen zur Ophthalmologie. (RUNGE), Leipzig, 1908 648
Hygiène Oculaire et Inspection Oculistique des Écoles. (TRUC ET CHAVERNAC, 2nd Edition, Paris, 1908 845
Iconographie Stéréoscopique Oculaire. (*Anatomie—Clinique technique Opératoire* (MONTHUS), Paris, 1908 928
Jahresbericht über die Leistungen und Fortschritte im Gebiete der Ophthalmologie (JULIUS VON MICHEL), Tübingen, 1907 139
Le Diagnostic de la Tuberculose par l'Ophtalmo-Réaction; Étude clinique et expérimentale. Travail de l'Institut Pasteur de Lille. (PETIT). Paris, 1907. (The Diagnosis of Tuberculosis by the Ophthalmo-Reaction 137
Lehrbuch der Augenheilkunde (Text book of Eye Diseases). (VOSSIUS). Leipzig and Vienna, 1908 401
Les Corps Étrangers Magnétiques Intra-oculaires et leur Extraction (Magnetic Intra-ocular Foreign Bodies and their extraction) (BÉAL), Paris, 1908 212
Les nouveaux procédés du Diagnostic de la Syphilis. Technique de la recherche des spirochètes dans les frottis et les coupes. Technique des inoculations expérimentales. Technique de la recherche des antigènes et anticorps syphilitiques (MORAX), Paris, 1908 143
Major Symptoms of Hysteria (JANET), 1907 1016
Manual of Diseases of the Eye (MAY), 2nd edition, 1908 557
Manual of Ophthalmic Operations (MAYNARD), Calcutta, 1908 465
Manual of Ophthalmic Surgery and Medicine (JESSOP), 2nd edition, 1908 844
Manual of the Diagnosis and Treatment of Diseases of the Eye (JACKSON), 2nd edition, 1907 61
Mercks, E., Annual Reports. Complete Series, Vol. XXI, 1907. Darmstadt, May, 1908 732
Muscles of the Eye. Vol. I, Anatomy and Physiology (HOWE), New York, 1908 845
Note sur quelques Troubles Oculaires Réflexes d'Origine Dentaire (BEAUVOIS) ... 64
Nouveaux Éléments d'Ophtalmologie (TRUC), 2nd edition, Paris, 1908 648
Ophthalmic surgery, a hand-book of surgical operations on the eyeball and its appendages as practised at the clinic of Prof. Fuchs (MELLER), London, 1908... 729
Ophthalmic Year Book, Vol. V (JACKSON, DE SCHWEINITZ, and SCHNEIDEMAN). Denver, 1908 928
Pathogénie du Glaucome (The Pathogeny of Glaucoma). (Rapport présenté à la Société Belge d'Ophtalmologie dans la Séance du 24 novembre, 1907) (TERSON), Bruxelles, 1907 215
Pathology of the Eye, Vol. IV., Part II.—General Pathology (PARSONS), 1908 ... 844
Précis d'Ophtalmologie. (TERRIEN), Paris, 1908 336
Principles of Refraction in the Human Eye Based on the Laws of Conjugate Foci (BURNETT), Philadelphia 557
Pulsating Exophthalmos: its etiology, symptomalogy, pathogenesis and treatment; being an essay upon an analysis of sixty-nine case histories of this affection (DE SCHWEINITZ), Philadelphia and London, 1908 929
Royal London Ophthalmic Hospital Reports, Vol. XVII, Parts I and II. Edited by William Lang 339
Second International Congress on School Hygiene, London, 1907. Transactions 1019
Single Pathogenesis of Vascular, Secretory, and Nodular Diseases of the eye and neighbouring organs (FALCO), Naples, 1906 63
Squint and Ocular Paralysis (HUGHES) London, 1907 213
Study of the ocular manifestations of systemic gonorrhœa with reports of cases of this nature (Byers). Studies from the Royal Victoria Hospital, Montreal. Vol. II. No. 2, 1908 470
Tests and Studies of the Ocular Muscles (MADDOX), 2nd edition, Philadelphia, 1907 211

PAGE

Text-Book of Ophthalmology. (FUCHS), 1908 464
The Commoner Diseases of the Eye : how to detect and how to treat them (WOOD and WOODRUFF), 3rd edition, Chicago, 1907 .. 139
Transactions of the American Ophthalmological Society, Vol. XI, part II. 1907 336
Transactions of the Ophthalmological Society of the United Kingdom, Vol. XXVII., Session 1906-7, London, 1907 139
————Vol. XXVIII., Fasc. 1, 1908. 336
————Vol. XXVIII., Fasc. 2, 1908 556
————Session 1907-8 926
Transactions of the Twelfth Annual Meeting of the American Academy of Ophthalmology and Oto-Laryngology, held at Louisville, Ky., September 26th, 27th, 28th, 1907 649
Transpositions (LOCKWOOD), New York, 1907 1016
Troubles Visuels dûs à l'Abus de l'Alcool et du Tabac (TERRIEN) (Visual Troubles consequent upon excess in Alcohol and Tobacco) Paris, 1908 402
Tuberculosis in Infancy and Childhood. By various writers. Edited by T. N. Kelynack, 1908 1013
Traitement des Plaies de l'Œil : Rapport presenté le 4 mai, 1908, *à la Société Française d'Ophtalmologie, Congrès de* 1908. The Treatment of Wounds of the Eye (TERSON), Paris, 1908 467
Ueber Behandlung von Augenverletzungen. (The Treatment of Wounds of the Eye), (LANGE), Halle, 1908 ... ...
Ueber den Frühjahrskatarrh (FELDMANN.)—(On Spring Catarrh), Halle, 1908 ... 558

NAMES.

PAGE

Abadie 824, 919
Abelsdorff, A. 204
Adam, C. 48
Adams, P. H. 83
Alger, E. M. 384, 839
Alt, Adolf 799
Alvarado 131
Alvarez 834
Amberg, H. 381
Ambialet 125
Angeli, Philippi... 825
Angiéras 446, 904
Antonelli... ... 48, 132, 555, 626, 715
Armaignac, H. 181
Armbruster 694
Ask, F. 833, 834
Aubaret 396, 900
Aubineau... .. .. 124, 700, 799
Angelucci, A. 820
Aurand 542, 986
Axenfeld, Th. 323, 811, 888, 926

Babinski 131
Bach, L. 513
Badal 804
Bailliart, P. 199, 838, 998, 999
Baker, Charles H. 313
Ballantyne, A. J. 985
Baquis, E. 699
Barck, C. 309
Bardelli, L. 377
Bardsley, P. C. 867
Bargy, M. 132
Bartels, Martin 99, 277, 721
Bassères 638
Basso 37, 323
Béal, Raymond 212, 322
Beard, C. H. 322
Beaumont, W. M. 800
Beauvois, A. 64, 286, 317
Bedell, A. J. 193
Benedict, A. L. 710
Bérard 387
Bertozzi, A. 32, 42, 554, 904
Best 552
Bettremieux 48, 396, 818
Beverley, Tucker 57
Bichelonne 446
Bickerton, T. H. 479
Bietti 33
Bioletti, C. 394
Birch-Hirschfeld, A. 285, 286, 323, 339, 555 806, 919

	PAGE
Birdwood, G. T.	105
Bistis, J.	54
Black, Melville	384, 394
Black, Nelson M.	721
Blanco	109, 317
Blaschek, A.	132
Blok, D. J.	985, 1007
Bocchi, A.	998
Bock, Emil	642
Böhm	313
Boldt	395
Bonamico, M.	441
Bondi, Maxmillian	132
Bonnard	715
Bonsignorio	455, 642, 919
Bonte	181, 447
Boon, H. A.	284
Bouchart	207, 384
Bradburne, A. Allison	915
Brady, G. T.	180
Brav, Aaron	545, 839
Brawley, Frank E.	285
Breuil	905
Brinton, A. G.	210
Britto, Victor de	285
Broca, André	131
Bronner, Adolph	119
Brons, P.	108
Brose, L. D.	998
Brown, E. V. L.	322
Bruckner, A.	286
Brunetière	990
Buchanan, Leslie	156, 198, 957
Burnett, S. M.	557
Burnham, G. H.	43
Burt, J. Barnes	11
Butler, T. Harrison	322, 418, 495, 589, 628, 685, 711, 919
Buzzard, E. Farquhar	641
Byers, W. Gordon	45, 470
Bylsma	617
Cabannes	285
Cailland	650
Calderaro	178, 426
Callan, Peter A.	55
Campos	205
Cange, A.	194
Cans	624, 823
Cantonnet, A.	97, 317, 540, 999
Caralt	545
Caravia, Eugene	998
Cargill, L. V.	198
Carlini	825
Carlotti	973
Carson, R. L.	721
Casali, A.	32, 286, 380, 394, 699
Castelain, D.	33
Cerise	317, 1014
Chabal, Léon	706
Chaillous	205
Chance, Burton	800
Chavez	52
Cheatham, Wm.	634
Chesneau, Marcel	546
Chevalier	124
Chevallereau, A.	322, 441
Chavernac, P.	845, 906
Chinton	124
Cirincione	60, 824
Clarke, Ernest	998, 999
Clausen	33, 805
Coakley, W. Byron	707
Coats, G.	59, 123, 530, 551, 983
Coburn, E. H.	309
Collins, E. Treacher	577, 663
Collins, H. Beale	768
Connor, Leartus	442, 641, 838
Contino, A.	39, 986
Coomes, M. F.	721
Coppez, H.	285, 623
Corser, J. B.	998
Cornell, W. S.	384
Cosmettatos	699, 904, 905, 919
Coulomb, J.	847
Courtellemont, V.	446
Credé	476
Cross, F. R.	36
Cunningham, H. H. B.	110, 286
Cuperus, N. J.	913
Cutler, Colman, W.	131
d'Allessandro, L.	998
Darier, A.	387, 932
Davies, H. M.	816
Davis, A. Edward	544
Dejonc	323
Delachanal	186
Dehenne	199
Delneuville	285
Delord	395, 718, 1007
Demaria	109, 178, 180
Demiéville, E.	109
de Schweinitz, G. E.	634, 929
de Silva, W. H.	70
de Stella	284
Deutschmann, R.	813, 940
de Vaucresson	446
Dianoux	824
Dimmer	140, 696
Distler	799
Dixey, W. A.	19, 686, 1023
Dodd, H. Work	77
Dor, H.	54, 986
— Louis	813
Doyne, R. W.	416, 653
Dransart	455, 631
Duane, A.	694
Duclos	124
Dufour, M.	825

	PAGE
Dunn, H. P.	917
Dunn, John	286
Dunn, Percy	82
Dupuy-Dutemps.	447, 905
Durante F.	283
Duyse, van	188, 376
Edgar, J. Clifton	119
Egbert, J. Hobart	545
Elkington, J. S. C.	915
Ellett, E. C.	545
Elliot, R. H.	65, 456
Ellis, H. Bert	545
Erb, Albin	387
Erdmann, Paul	825
Erlanger, M.	628
Evans, J. Howell	259
Evans, J. Jameson	132, 235, 691, 839, 954
Ewetzky, Th.	131
Eyre, J. W. H.	108
Fabrini, E.	313
Fabris, Ugo	699
Fage	103
Faith, T.	545
Falco	63
Famechon, F.	631
Farid. Nasr	347
Fejér, J.	905
Feldmann	558
Felsch, Hildegard	700
Ferentinos	124
Fergus, A. Freeland	45, 999
Fernandez	455, 545, 825
Ferrara, M.	394
Fischer, J.	54, 699
Fish, H. M.	243, 400
Fisher, J. Herbert	539, 556
Foerster	708
Ford, Rosa	23, 593
Fortunati, A.	124
Foster, M. L	800
Fox, L. Webster	395, 545, 839
Frazer, Henry	109
Frenkel	545, 918
Fromaget	387, 394
Frosch	33, 805
Früchte, Wilh.	699
Frugiuele, C.	825
Fuchs, Ernst	464, 742
Fukala	124
Galezowski, J.	118, 446, 546, 708, 919
Gallemaerts	378
Galloway, A. Rudolf	159, 344
Galtier	545
Garrow, Alex.	485
Gasparini, E.	822
Gendron	544
Gidney, H.	54, 456
Giffo	905
Gifford, H.	317, 724
Gillman. R. W.	545
Goering, H.	927
Goldzieher, N.	641
Gonzalez	838
Gowers, Sir W. R.	412
Goyanes, Jose	131
Graefenberg, E.	52
Grandclément, Lucien	106
Greeff	33, 144, 805
Green, John, Jun.	284
Grey-Edwards, H.	79
Griffin, O. A.	286
Grimsdale, Harold	426, 875
Gross, O.	555
Guichemerre, P.	446
Guibert	380
Guillery	544, 919
Gutmann, A.	718
Guttmann, J.	284
Haab	557
Hall, George	816
Hamburger, W. W.	536
Hamilton, R. J.	131
Hanke, Victor	178
Hansell, H. F.	309, 998
Happe, H.	625
Harman, N. Bishop	919
Harms	130
Hawley	839
Hawthorne, C. O.	895
Hay, Percival G.	172, 496
Heard, Major R.	395
Heine, L.	538
Henderson, Thomson	519, 746
Henger, C. A.	826
Hepburn, M. L.	825, 897
Herbert, H.	65, 163, 483, 553, 849, 936
Hertel, E.	45
Hertz, A. F.	108
Hess, C.	204, 806
Hesse, Robt.	825, 984
Higgens, C.	800
Hilbert	543
Hirschberg, J.	51, 52, 476
Hodskins, M. B.	624
Hoeve, J. van der	904
Hoffmann, E.	136
Hoffmann, R.	284
Holth, S.	978
Horsley, Sir Victor	658
Howe, Lucien	845
Hubbell, A A.	725
Hudson, A. C.	110
Hughes, Edmund	185
Hughes, E. Lucas	213
Hummelsheim, E.	101
Hutchinson, Jonathan	733

	PAGE
Ideler	641
Igersheimer, I.	617
Isakowitz	905, 980
Jack, E. E.	394
Jackson, Edward	61. 131, 1023
Jameson, W. E.	210
Janet, P.	1016
Jessop, W. H.	844
Jocqs	323, 538
Johnston, R. H.	284, 285, 286, 322
Joland	110
Jones, Ernest	527
Keiper, G. F.	313
Kelly, J. M.	641
Kennel, J. von	131
Kirkpatrick, T. P. C.	384
Knapp, Arnold	284, 286, 309, 322, 625, 981
Koenig	446
Koerber, H.	904
Köllner, H.	52
Königshöfer	131, 322
Koster, W.	323, 381, 455, 555
Krailsheimer, Dr.	172
Krauss, W.	274, 456, 530, 617
Krusin, F. F.	721
Kuhnt, H.	456, 991
Kümmell, R.	381
Kuschel, J.	825
Laas	275
Laferrère	52
Lagleyze	52, 552
Lafon	804
Lagrange	214, 323, 363, 396, 632, 770
Lancereaux	317
Landolt, E.	207
Lang, Wm.	339
Lange, O.	146, 1011
Langer, Max Konrad	708
Langheld	839
Langworthy, H. G.	285
Laroyenne	454
Laspeyres, K.	699
Lauber, H.	309, 986
Lawson, Arnold	44, 551, 638
Leblond, Etienne	208
Lederer, R.	395
Lee, C. G.	642
Leenheer, C. A.	322
Lefebvre, G.	456
Le Fevre, W. I.	381
Leplat, L.	181, 998
Leprince, A.	839
Le Roux, H.	456, 804
Levinsohn, G.	446
Lewis, F. P.	317
Lobel, A.	118
Lockwood, R. M.	1016
Lotin, A. W.	130
Löwenstein, Arnold	898
Lukens, Charles	376
Lundsgaard, K.	919
MacCallan, A. F.	406, 856, 947
McGillivray, Angus	118
Mackay, D. M.	540
Mackay, George	317, 999
McKee, Hanford	33, 109
Macleish, A. J.	634
Mactier, H. Carter	2
Maddox, E. E.	211, 414
Maggi, F.	124
Maillet, F.	107
Makai, Endre	33
Mallannah, S.	641
Marple, W. B.	634
Martin, H. H.	838
Martindale, W. H.	728
Marx, G.	986
Marz	1008
Maser, G. W.	124, 813
Massey, A. Yale	866
Massia	186
Mathieu, J.	699
May, C. H.	557
Mayer	721
Maynard, F. P.	465, 864
Mayou, M. S.	132, 553, 566, 699, 986, 999, 1012
Meller, J.	322, 729
Menacho	387, 395
Menzies, J. Acworth	164
Menzies, J. C.	210
Merck, E.	732
Merrill, C. S.	193
Mettler, L. Harrison	384
Meyers, D. Campbell	708
Micas	131
Michaeler	799
Michel, J. von	139
Milian, G.	1008
Miller, V. G.	986
Mohr, M.	719
Moissonnier	284, 617
Monbouyran	918
Monthus, A.	323, 928
Montinho, Mario	317
Moore, G. A.	624
Morax, V.	143, 191, 323, 387, 447, 973
Moreau	454
Morton, A. Stanford	59
Motais	374
Müller, B.	904
Nance, W. O.	905
Napp, O.	998
Nedden	196

	PAGE
Nettleship, E.	534
Noll, H.	617, 905
Noceti, A.	124
Nuel, J. P.	631
Oeller, H. J.	1015
Oguchi, Ch.	720
Ohlemann, M.	903
Ohm, J.	313
Oliver, Charles A.	44, 531, 952
O'Meara, Capt. E. T.	49
Onodi, A.	337
Ovio, G.	130
Pagenstecher	376
Painblan	628
Palermo, C.	554
Pansier	624, 823
Panton, P. N.	110
Paon	1007
Paparcone	986
Parinaud, H.	131
Parisotti	833
Parker, Frank J.	117, 309
Parker, H. C.	711
Parsons, J. Herbert	556, 642, 844
Pascheff	378, 617, 632
Pasetti, G.	380
Paterson, J. A.	285
Paton, Leslie	530, 620, 813
Paul, L.	617
Paulesco	318
Pause, G.	833
Pearson, J. S.	906
Peck, W. H.	309
Pendred, Vaughan	185
Percival, A. S.	15
Pergens	207, 831
Perlander	394
Perrod, G.	699
Pes, O.	394
Peters	57, 201, 808, 905, 930
Petit, L.	137
Petrosino, R.	124
Pfeiffer, C.	322
Pflugk, v.	124, 593
Pincus, Frederick	317, 983
Plange, O.	717
Pohl	631
Poissonier, G.	313
Polack, A.	206, 441
Pollak, A.	546
Posey, W. C.	286, 905, 981, 999
Post, M. H.	721
Poujol	638
Poulard	636
Price, George H.	124
Prince, A. E.	545
Pyle, W. L.	834, 906
Querenghi	132, 394
Rachlmann, E.	444, 825
Radcliffe, McCluney	676
Rampoldi, R.	124, 387
Randolph, R. L.	32, 617
Ray, J. Morrison	55
Reber, Wendell	286, 387, 394, 453, 634, 838
Reeve, R. A.	408
Reik, H. O.	384
Reish, Wilh.	181, 905, 906
Remak	813
Remy	48
Revel, P.	718
Rhein, J. H.	313
Rhoads, J. N.	721
Ring, G. Oram	322
Risley, S. D.	313, 395, 800
Robin, E. A.	998
Roche, Charles	706
Rochon-Duvigneaud	522
Rodiet	624, 823
Rollet	105, 285, 395, 455, 542
Roper, A. C.	455
Roselli	394, 838
Roure	132, 642
Roy, Dunbar	284
Roy, M. J. M.	377
Runge, E.	648
Sachs	624
Saemisch	406
Salmon, Paul	838
Salomonson, Prof. (Amsterdam)	540
Salus	541
Salzmann, M.	700
Santos-Fernandez, J.	51
Santucci, S.	699
Satterlee, G. Reese	710
Scalinci	817
Schieck, F.	833
Schiele, A.	119
Schmidt Rimpler, H.	322, 825
Schoeler, Fitz	981
Schœning	526
Schulin, C.	834
Schumacher, Gerhard	387
Scrini	124
Seggel, K.	280
Selenkowsky, J. W.	919
Shennan, T.	637
Sherwell, S.	642
Shoemaker, W. A.	181
Siegrist, A.	712
Sievert, H.	815
Sinclair, A. H. H.	637
Smith, Major H.	131
Snell, Simeon	119, 198, 224, 642, 721, 734
Snellen, Hermann (Obituary)	154, 219
Sommer, G.	914

PAGE

Spalding, J. A. 545
Spencer, Major C. G. 317
Sperber, Em. 322
Spicer, W. T. Holmes 617
Stephenson, Sydney, 22, 165, 181, 253, 347, 394, 527, 598, 636, 678, 776, 959
Stewart, T. M. 721
Stock, W. 534, 834
Stocké, E. 820
Stocker, F. 280
Stoewer, P. 280
Stolting 455
Stöwer, P. 178
Straub, A. 799
Struijcken, ... 207
Sulzer, D. 131, 209
Sutherland, G. A. 986
Syme, W. S. 287

Tanner, Herbert 872
Tay, Waren 198
Teale, Pridgin 1025
Teillais 271
Terrien, F. 336, 402
Terson, A. ... 215, 467, 538, 838, 919
—— père 538
Tertsch, R. 178, 1007
Thomson, Ernest 8, 84, 198, 350, 489
Thomson, H. Wright 915
Thomson, St. Clair 228, 284
Toms, S. W. S. 384
Tooke, Fred T. ... 110, 309, 800
Toufesco 131
Trantas 50
Treu, E. 54
Trombetta, E. 138
Troncoso, Uribe... 1007
Trousseau 637, 985, 990
Truc, H. 107, 648, 845
Trüchte, W. 984
Tschirkowsky, W. 178
Tsherning, M. 691
Turner, A. Logan 286
Twietmeyer, J. 1007
Tyson, H. H. 906

Ulbrich, H. 395
Usher, C. H. 109, 551

PAGE

Valude 124, 214, 323, 395, 522, 544, 642, 919
Van den Borg, T. 625
v. Colditz, G. T. 545
Velhagen, C. 831
Verderame, Pl. 905
Viciano 1007
Vigier 33
Villard 57, 58
Vogt, A. 552
Von Michel, J. 713
Vossius, A. 401

Walker, A. Nimmo 529
Wasjutinsky, A. 313
Watanabe, B. 323
Wedd, B. H. 108
Weeks, J. E. 395, 522
Weigelin, S. 982
Weil, G. 970
Weisenburg, T. H. 629
Weiss, K. E., Jr. 283, 533
Werner, Louis 700
Wernicke, Otto 986
Westcott, W. W. 728
Widmark, J. 838
Wilbrand 708
Wildenberg, van den 285
Windmüller 545
Wintersteiner 906
Wolff, Bruno 23, 88
—— Hugo 899
Wood, Casey A.... ... ... 139, 284
—— D. J. 59
Woodruff, T. A. 139
Woods, Hiram 982
Wray, C.... ... ... 546, 684, 767
Wright, Sir Almroth 998
Würdemann, H. V. 721

Yvert, A. 839

Zade, Martin 33
Zentmayer, W. M. 799
Ziegler, S. L. 800
Zimmermann, W. ... 313, 387, 455, 456

SUBJECTS.

Entries printed in thick type indicate grouped or special abstracts.

PAGE

Accessory sinuses 284
Accidental vaccinia 210
Acoin, as a prolonged anæsthesia for the human eye 389
——— oil 128
Acromegaly, exophthalmos of 817
Adrenalin, the effects of prolonged instillations of ... 129
———— with cocain in cataract extraction 163
After-cataract, operations for 970
——— ——— treatment of 118
Albinism, the eye in 552
Albino family, an 589
Alcohol, injection of and blepharospasm 645
———— injections of as a cure for clonic facial hemi-spasm... 126
———— injections in eye work ... 777
Alvarenga, Prize 1027
Alypin, a new local anæsthetic ... 125
Amaurosis, felix-mas, our knowledge of 526
Amaurotic, family idiocy 534
———————— ophthalmoscopic lessons in a case of ... 911
Amblyopia, congenital, 795 cases of ... 907
———— in children, a little known type of 584
———— toxic, prognosis of ... 1010
Ametropia, a monocular method of the correction of 82
Anæmia, cerebral and ocular complications of 895
Anæsthesia, general, in eyework ... 788
———— regional 898
Anæsthetics and analgesics 604
Anatomical basis of blindness following orbital abscess 277
———— contributions on spindle-shaped cataract 703
Anatomy and development of the edge of the eyelid 39
———— applied topographical, of the sinuses accessory to the nasal cavities in their relations to the orbit... 259
Aneurism, spontaneous arterio-venous, of the orbit 319
———— traumatic, of the orbit ... 319
Angiolipoma of the eyelids and orbit 702
Angiosarcoma of the upper eyelid ... 985
Animal organo-therapy in eyework ... 784
Anophthalmia, a case of 908

PAGE

Anthrax of the eyelid 191
Anthropometrical studies on the size of the anterior opening of the orbit in Swedes, and their relationship to myopia 834
Anti-diphtheritic serum, cases of ocular infection treated with 1005
———————— in hypopyon ulcers ... 920
———————— in the treatment of eye diseases 511
———————— non-diphtheritic pseudo-membranous ophthalmia, cured by 388
Antigonococcic serum in the treatment of the eye 572
Anti-pneumococcic serum in the treatment of diseases of the eye ... 512
Antiseptics 609
Anti-staphylococcic vaccine, a note on 414
Antrum of Highmore, functional eye disturbance caused by disease of ... 297
Antyllos, cataract operation according to 51
Appointments, 148, 222, 340, 405, 475, 559, 732, 937, 1025
Arsenic in syphilis 838
Arterial pulse, the pulsatile phosphene, an entoptic phenomenon of the 135
——— tension, high, effects of upon some tissues of the eye 634
Arterio sclerosis 634
Arthritis, rheumatoid, acute iritis in ... 11
Atoxyl in eye work 795
Atropine and the cure of acute glaucoma produced by eserine 999
———— solution in the eye, unusual constitutional effects of 549
Aural infections, intra-cranial complications of, the choked disc in ... 451
Axenfeld's retractor, a modification of 685

Bacillus hæmophilus of Pfeiffer, metastatic ophthalmia due to ... 32
——— subtilis, panophthalmitis and hypopyon keratitis from 33
Bactericidal substances in the conjunctival secretion 196
Bacteriological aspects of neuropathic keratitis 816
———————— examination of the conjunctival sac in typhoid fever and in pneumonia 32

PAGE

Bacteriological examinations of the conjunctival sac in typhoid fever and in pneumonia 618
Bacteriology 32, 178
Basedow's disease 903
Becquerel rays (radium), can trachoma be cured by? 921
Bifocal lenses 691
Bilateral congenital coloboma of the lens; subsequent dislocation of both lenses... ... 908
——— gumma of the orbits in a child eight years old ... 310
——— serous tenonitis with monocular exophthalmos... ... 538
Biniodide of mercury dissolved in petrol 125
Binocular magnifier 349
Birds, day, light and colour sense of ... 204
Birth injury, ocular 198
Blennorrhœa neonatorum from the bacillus coli communis, case of ... 111
Blepharitis, rational treatment of ... 843
Blepharospasm and injection of alcohol 645
Blind, conference on the 738
——— education of the cultured ... 533
Blindness 119
Blindness caused by cerebral sinus-thrombosis following phlegmonous tonsillitis 282
——— following operations upon the nose 275
——— following orbital abscess 277
——— gonococcus infection as a cause of 119
——— in children, its definition, and its causes and prevention 120
——— in 333 inmates of the Sheffield school for the blind, inquiry into the cause of 121
——— night 131
——— sudden, following suppurative conditions about the eyeball 294, 310
——— two cases of, due to sphenoidal sinusitis 295
Blood-vessels in the vitreous, new formation of 1008
——— of the eye in syphilis, pathologico-anatomical change in the 713
Bowman Lecture 937
Bright's disease, two cases of iritis in the course of 800
British Medical Association. Section of Ophthalmology, 1908 735
Buphthalmos: in inherited syphilis ... 803
——— secondary, partial amputations of the eyeball for 396

PAGE

Cacodylate of soda and arrhenal in ulceration of the cornea ... 646
Camphor water, and cherry-laurel water in collyria 550
Canaliculus supernumerary, a case of... 908
Cancer, cases of: the therapeutic action of iequirity in 388
Calmette, ocular reaction to tuberculin 711
——— reaction 710
——— the tuberculin "ophthalmo-reaction" of 108
Calmette's method in treatment of eye disease 499
——— ophthalmo-reaction 628
——— dangers of 712
——— ophthalmo-reaction. Is it free from danger?... 489
Capsulo-pupillary membrane and hyaloid artery: a persistent case of .. 347
——— persistent in both eyes 866
Carcinoma, metastatic, of the orbit, more especially of the ocular muscles ... 333
Carotid, common, ligature of the ... 318
Caruncle, melanotic epithelioma of the 989
——— tumours of the 718
Cataract 51
——— an interesting period in the history of 54
——— and the iridectomy, incision for the extraction of ... 395
——— anterior polar, contribution to the formation of 1,009
——— as a premonitory symptom of tetany 54
——— couching operation for .. 811
——— delivery of the lens for the extraction of 395
——— due to iron, clinical note on 53
——— experiences derived from 1,284 extractions with iridectomy 54
——— extraction 394
——— adrenalin with cocaine in ... 163
——— avulsion of the anterior capsule in the operation for 54
——— correspondence on review of Herbert's work ... 935
——— loss of vitreous humour in the operation for ... 55
——— present status of preliminary iridectomy as related to... ... 396

PAGE

Cataract extraction, use of Desmarre's eyelid retractor in 54
——— formation after an electric shock 54
——— incipient, does it ever disappear? ... 442
——— ——— treatment of with potassium iodide 593
——— iritis with hypopyon occurring in patient operated on for 53
——— knife, use of the secondary... 394
——— newer operations for ... 880
——— operation according to Antyllos .. . 51
——— ——— for posterior capsular opacities after 51
——— operation, the flap in ... 457
——— operations, history of ... 53
——— secondary, operations for ... 55
——— senile, twenty-six cases in which both eyes were operated on, for 458
——— some problems of the operation of 457
——— spindle shaped, anatomical contributions on 703
——— spontaneous cure of 56
——— sub-conjunctival extraction of 696
——— traumatic and secondary glaucoma 827
——— treatment of, by iodide of potassium in subconjunctival injections 388
——— treatment of, by potassium iodide 546
Cataracts, extraction of, some important considerations in the 394
——— incomplete, operations on .. 397
Caustics, the treatment of corneal opacities caused by 921
Cavernous sinus 280
Cellulitis, orbital, two fatal cases of ... 311
Central colour scotomata, diagnosis of 978
Cerebral and ocular complications of anæmia 895
——— and ophthalmic complications in sphenoidal sinusitis ... 287
——— sinus-thrombosis following phlegmonous tonsillitis, as cause of blindness 282
——— tumours, optic neuritis in ... 620
Ceylon, lepra ophthalmica in 70
Children, blindness in, its definition, causes, and prevention ... 120
——— school examination of, in New York State 149

PAGE

Chinese ink, subconjunctival injection of, in the eyes of albinos 547
Chloroma 193
——— case of 327
——— of the skull as a typical nosological complex ... 324
——— with special reference to ocular symptoms 193
Choroid and orbit, melanosarcoma of the 325
——— infections of the 542
——— tubercle of the 198
——— ——— tubercle of the, treated by tuberculin 1002
——— tuberculosis of the 542
"Chlorophylle," tinted glass for eye protectors and spectacles 592
Cicatricial fixation of the eyes after syphilitic necrosis of the nasal wall of the orbit ... 312
——— symblepharon, partial, grafting a flap of the mucous membrane in, and treatment of ... 396
Cicatrices filtering, operations for ... 483
Clonic facial hemi-spasm, cured by injections of alcohol 126
Collyria, camphor water and cherry-laurel water in 550
——— isotonic with the tears, formulæ of 1004
——— oily 128
Coloboma of the eye 909
——— ——— lens 908
——— ——— optic nerve with normal vision 907
Colobomata at the entrance of the optic nerve 906
Colour and light sense in some diseases of the nervous system 554
Colour-blind artists, paintings of ... 820
Colour vision, etc., of birds 204
——— ——— simultaneous contrast in 444
Congenital amblyopia, 795 cases of ... 907
Congenital anomalies 904
——— anterior staphyloma, further history and pathological examination of a case of... 551
——— ——— defects, multiple, a case of 911
Congenital entropion 208
——— filiform anchyloblepharon 909, 912
——— ——— ophthalmoplegia externa, a case of incomplete .. 678
——— serous cyst of the iris ... 379
——— squint 909
——— word-blindness 808
Conjugate deviations of the eyes and cerebral legions 629

PAGE

Conjunctiva, accidental vaccination of the 210
——— granuloma of the ... 703
——— hæmorrhage from the, due to hereditary hæmorrhagic diathesis 209
——— melanosarcoma of the ... 989
——— multiple fibrous polypi of the 700
——— on implantation dermoids of the 700
——— pseudo-membranous inflammations of, the clinical study of 111
Conjunctival catarrh, healing processes in 196
——— sac, a new micro-organism of the 33
——— bacteriological examination of, in typhoid fever and in pneumonia ... 32, 618
——— instillations of fibrolysin into the ... 547
——— secretion, researches regarding the presence of bactericidal substances in the 196
——— tuberculin reaction ... 628
Conjunctivitis, acute 109
——— bacteriological examination of 100 cases of ... 33
——— ætiology of .. 914
——— analysis of a series of consecutive cases seen in Aberdeen ... 110
——— follicular, one eye only treated, result of special method of treatment 551
——— gonococcal, an atypical case of 619
——— in children 646
——— influenzal (bacillus of Pfeiffer) 178
——— metastatic, in gonorrhœa 111
——— Parinauds (?) a case of 640
——— (a case with corneal lesions) 639
——— five new cases of 199
——— its pathology in relation to the presence of the plasma cell 638
——— pneumococcus ... 113

PAGE

Conjunctivitis, pseudomembranous, due to the pneumococcus 111
——— purulent 111
——— simple chronic, pathology, and treatment of ... 201
——— some unusual forms of ... 113
——— streptococcic 115
——— with enlargement of the glands 637
Contractions of the fields according to the type of Foerster or Wilbrand 708
Cornea 180
——— burn of with quick-lime, peculiar course taken by 183
——— in multiple sclerosis 541
——— partial staphyloma of the, the cause of high tension in ... 830
——— primary epithelioma of... ... 181
——— marginal ulcer of ... 179
——— regeneration of after infective ulcerations and total destruction of the membrane ... 183
——— the technique of tattooing the... 459
——— transplantation of, operation for 49
——— of, with the preservation of transparency 717
——— cacodylate of soda and arrhenalin in ulceration of ... 646
Corneal microscope, a new portable ... 957
——— opacities produced by the caustic effects of certain metallic poisons : improved method of clearing them up 546
——— treatment of by thiosinamine ... 550
——— parenchyma, diseases of the. Contributions to the histopathology of 182
——— ulcers due to pneumobacilli... 180
——— ulcerations, treatment of ... 647
Correspondence 64, 651, 724, 932, 1022
Couching operation for cataract ... 811
——— question, contribution to the 462
Cranial fracture followed by probable fracture of the optic canal 454
Crystalline lens, developmental deformities of the 577, 663
——— dispersion of light in the 980
Cyanosis of the retinæ 134
Cyclitis 800
Cylindroma of the orbit in a child ... 329
Cyclodialysis, new experiences with ... 398
Cycloplegics, use of in refraction work 694
Cyclops 136

PAGE

Cyst, dermoid of the orbit and cranium 328
—— mucous, of the orbit, with oil-like contents 328
—— of the lacrymal gland 988
—— spontaneous serous, movable in the anterior chamber 378
Cysticercus cellulosæ, early changes produced in the eye by ... 60
Cysticercus (in the eye) 59
———— of the orbit 331
———— subretinal, a peculiar case of 704
Cysts, intraocular, case of 59
Cysts of the iris 377
—— of the sclera 988
—— serous of the iris, new theory on the origin of 379

Dacryocystitis and maxillary sinusitis due to gonococci in a newly-born child 296
———— chronic, method of Guaita in the treatment ... 397
———— historical and clinical contribution to the treatment of ... 400
" Daily Mail " edition for the blind ... 152
Daltonians, paintings of the 820
Decentering of lenses 205
Degeneration, colloid, of the tarsus and conjunctiva 553
Dental and ocular stigmata of hereditary syphilis 715
Dermoid cyst of the floor of the orbit 334
Dermoids, ocular, origin of 987
Desmarre's eyelid retractor in cataract extraction 54
Detachment of the retina 813
Deutschmann's serum and infectious disease 513, 940, 1,000
Deviometer, a glass 722
Diabetic paralysis of accommodation ... 718
Diagnosis of central colour scotomata 978
———— serum 508
Diagnostic Value of Physostigmine in anomalies of the pupil reflex ... 101
Diaphanoscopy of the Eye ... 724, 959
Diaphoresis in the treatment of internal ocular affections 1,001
Diet as a therapeutic measure in certain eye diseases 546
Dionin in the treatment of old opacities of the cornea 842
——— the uses of in diseases of the eye 1002
Diphtheria of the conjunctiva and cornea in an adult... ... 619
———— of the conjunctiva, pathological anatomy of 619
Disc, choked, following meningitis; recovery 447

PAGE

Disc, choked, in the intra-cranial complicat ons of aural infections 451
———— pathogenesis of ... 449
Diseases of the orbit 309
Dislocation of the eyeball in a newly-born child 103
———— through the palpebral fissure 57
Dispersion of light in the crystalline lens 980

Ectropion, senile, a small modification of the Kuhnt-Müller operation of 399
Education of the cultured blind ... 533
Egypt, Government schools in, etc. ... 947
——— Ophthalmic conditions in the Government Schools and their amelioration 856
Electric Car System, a method of removing the disturbing influence of upon the Sideroscope 383
——— shock, cataract formation after 54
Electricity as an agent for reducing the intra-ocular tension 840
Electro-Diagnosis of oculo-motor paralysis 540
——— magnet, removal of iron splinters by the 37
———— Volkmann's in eye surgery 381
Embolism and Thrombosis 983
————of the arteria centralis retinæ 701, 985
———— of the retina in children 636
Emotional glaucoma 829
Empyema of the accessory sinuses of the nose, complicated by orbital abscess 294
———— of the maxillary antrum, followed by orbital cellulitis and atrophy of the optic nerve of the same side and sympathetic ophthalmitis 271
———— of the sphenoidal sinus, with remarks upon the anatomy of the spheroidal sinuses... 305
Encephalocele with choked disc, a rare case 325
Enophthalmos, traumatic ... 376, 917
Entropion, congenital 208
———— operation for 398
———— trachomatous, of the upper eyelid, pathogenesis and radical cure of 194
Enucleation in sympathetic ophthalmia, the time for 924
Epibulbar, melano-sarcoma 988
Epilepsy and eye strain 624
———— Is eye strain ever an etiologic factor in ? 386

PAGE

Epileptics, the eyes of, between the attacks 823
Epithelioma of the orbit 324
———— palpebral, history of ... 987
———— primary, of cornea ... 181
Erysipelas, three signs for the diagnosis of 1011
Eserine, diagnostic value of, in anomalies of the pupil reflex 101
Eusemine, a stable compound of cocaine and adrenaline 642
Exanthematous keratitis 50
Exenteration by the cautery, and panophthalmitis 459
Exophthalmos caused by disease of the ethmoidal cells and frontal sinus—drainage—recovery ... 287
———— in the maxillary sinusitis of babies 307
———— of acromegaly 817
Exophthalmos pulsating 317
———— treatment by the methods of Lancereaux and Paulesco 318
———— unilateral, in a new-born infant 312
Extirpation of the lacrymal sac with the raspatory, operative technique of 456
———— of the superior cervical ganglion of the sympathetic nerve 822
Extraction of splinters of iron from the eye with the poleless magnet ... 382
Eye and nose, diseases of the, clinical and statistical contribution on the relations existing between ... 300
—— changes in skull deformities with special reference to tower skull and rickets 530
—— diseases of the, light treatment in 45
Eyeball, anterior segment of the; congenital glandular tumour like malformation in ... 702
———— dislocation of, in a newly-born child 103
Eyelashes, white, unilateral, and tufts of hair 551
Eyelid, free border of the, peculiar infection of 33
——— upper, and jaw, associated movements of... 22
Eyelids and orbit, angiolipoma of the 702
——— malignant pustule of the ... 191
——— newer operations on the ... 884
——— syphilitic lesions of the 117
Eyes and lids, paradoxical associated movements of the 135
—— self-mutilation of the 804

PAGE

Eyesight of school children 915
Eye-strain 384
———— a case of, mistaken for appendicitis and cholelithiasis 386
———— and epilepsy 624
———— in school children... ... 386
———— is it ever an etiologic factor in epilepsy? 386
———— relation of to chronic headaches 384
Eye symptoms in hysteria 708
———— of thyroid origin ... 820

Facial neuralgia, treatment of by radiotherapy 843
Family degeneration of the retina with idiocy 534
Felix mas amaurosis, our knowledge of 526
Fibrolysin in eye work 793
———— instillations of into the conjunctival sac 547
Fibroma, orbital 326
Filtering cicatrices (correspondence) .. 64
Filtering cicatrix in the cure of glaucoma 363
———— so-called. the question of 84
Filtration of liquids through the anterior chamber, etc, origin of glaucoma 1008
Fly larva in the anterior chamber .. 10
Forceps, a fixation 555
Foreign body in antrum of Highmore, removal after 14 years 314
———— in the orbit 314
———— bodies retained in the eye 136
———— some remarkable injuries to the eye by 383
———— superficial, in the eye, remarks on 136
Foreign bodies: their removal, localization, etc. 380
Formol in the treatment of infective keratitis 645
Fracture of the Skull and of the optic canal 454
Fractures of the orbit 313
Fronto-orbital mucocele ... 295
Fundus changes, the result of injury at birth 556
——— oculi, photography of the ... 899

Gasserian ganglion, removal of the 283
Glands, parotid and lacrymal, symmetrical enlargement of 131
Glaucoma 824
———— a case of, treated by Lagrange's operation of sclerecto-iridectomy ... 416

PAGE

Glaucoma acute, and dacryocystitis ... 828
——— acute, consecutive to contusions of the eyeball .. 58
——— ——— note of the season prevalence of 864
——— ——— produced by eserine and cured by atropine 999
——— after contusions of the eye, and its treatment 58
——— anatomical factors in the pathogenesis of 746
——— and detachment of the retina 829
——— chronic simple, simple sclerectomy in 770
——— ——— surgical treatment of 395
——— experimental, investigations on the glaucomatous eye in animals 828
——— in consequence of cicatrix of the cornea with anterior synechia (leucoma adhærens) 742
——— is there a diabetic? 134
——— Lagrange's operation for ... 522
——— malignant, after iridectomy recovery after posterior sclerotomy 830
——— newer operations for ... 875
——— primary due to occlusion of the pupil caused by the lens 826
——— relation of, to the filtration of liquids through the anterior chamber... ... 1008
——— remote results of sclerochoriotomy in the treatment of 397
——— review of some recent work on the surgical treatment of 84
——— secondary to dislocation of the crystalline lens ... 828
——— simple anterior sclerectomy in 818
——— ——— chronic, first onward step from the glaucomatous disposition 830
——— the filtering cicatrix in the cure of 363
——— the genesis of, and the lymph circulation of the eye... 418
——— traumatic 57
——— with contracted pupil ... 827
Glycerine as an adjuvant to silver nitrate 925
Gomenol 615
——— in the clearing of torpid interstitical opacities of the cornea 130

PAGE

Gonococcal conjunctivitis, an atypical case of 619
Gonococcus infection as a cause of blindness, vulgo-vaginitis, and arthritis 119
Gonorrhœa, metastatic conjunctivitis in 111
Gonorrhœal iritis 802
Grafting a flap of the mucous membrane in the treatment of partial cicatrical symblepharon 396
Granuloma of the conjunctiva 703
Gumma of the ciliary body, two cases of 988
Gunshot injury of the orbit, removal of bullet with preservation of sight by Krönlein's operation 316

Hæmorrhage from the conjunctiva .. 209
Hæmorrhages, intra-ocular, treatment of 1002
——— ——— spontaneous, within the orbit 311
Hæmorrhagic glaucoma and retrochoroidal hæmorrhages, pathological anatomy of 701
Headache and ocular treatment ... 1006
Headaches, chronic, eye strain in relation to 385
——— ——— of ocular and nasal origin. differential diagnosis between 385
Hearing and the acuity of vision .. 207
Heat, direct application of to the eye 603
Heat rays and hypermetropia 694
Heilserum, Deutschmann's, reports of trials of, made in the University of Berlin 1000
Hemiplegia, organic, oculo-motor muscles in 205
Hens and pigeons, on adaptation and visual purple in 204
Horse-hair drainage of the anterior chamber for hypertension and pain 395
Hydrophthalmia, iridectomy or sclerotomy in 458
Hyoscin and scopolamin hydrobromid in refractive work. Comparative potency of 390
Hyperæmia in eye work 798
Hypermetropia, high, a case of, with optical measurements 912
Hypermetropic eye, the action of heat rays upon 694
Hypnotism and suggestion in ocular therapeutics 389

PAGE

Hypopyon-iritis associated with epidemic cerebro-spinal meningitis 803
——— Keratitis, sub-conjunctival injections in ... 125
——— ——— ——— with staphylococcus aureus resembling sarcinæ 180
——— ulcer, treated by staphylococcic vaccine 79
Hypotonia bulbi and lipaemia retinalis in coma diabeticum 538
Hysteria and neurasthenia in ophthalmology 99
——— eye symptoms in 708

Idiocy, amaurotic family, with degeneration of the retina 534
Iglan hospital, report on the eye classification 132
Illuminating eye spud and knife needle 723
——— ——— test-type charts with artificial light 723
Implantation of epithelium in the lens 702
Incipient cataract, does the opacity of ever regain transparency? ... 442
India, eyesight of the children attending the Army schools in 916
Infections 617
Infections of the choroid 542
Infections, rare, of the eye 179
Influenzal conjunctivitis (bacillus of Pfeiffer) 178
Injuries of the eye from lightning ... 543
——— of the eyes and their treatment 712
——— severe, of the eye, indications of conservative and radical operation in 555
——— to the eye by penetrating pieces of steel, treatment of ... 1001
——— to the eyes of the child during labour 23, 88
Injuries to the orbit 313
Injury to the eye among members of the Quarrymen's Union, study of 100 cases 101
Instrument to shorten the subjective branch of refraction 723
Instruments and appliances... ... 720
Interstitial keratitis 719
——— ——— ——— due to acquired syphilis 539
——— ——— ——— importance of traumatism in determining an attack of 182
——— ——— ——— treatment of ... 838
Intra-ocular cysts, case of 59
——— ——— foreign bodies, extraction on the 21st day; cure ... 381

PAGE

Intra-ocular pressure, transient increase in 828
Intravascular endothelioma of the orbit 330
Iodine and mercury, dangers of employing simultaneously compounds containing 843
——— cutaneous administration of ... 389
Iodide of potassium, the treatment of cataract by 388
Iridectomy, a rare late complication of 400
——— ——— in irido-choroiditis, indications for 347
——— ——— or sclerotomy in hydrophthalmia 458
——— ——— rare complication of ... 1009
——— ——— should it be performed in glaucoma in the presence of diabetes 134
Iridic angle, iridocyclitis, pigmented hypopyon and pigmented embolism of the 703
Irido-choroiditis, chronic, in adults, ætiology of 801
Irido-cyclitis 799
Irido-cyclitic irritation following vaccination 801
Irido-cyclitis, pigmented hypopyon and pigmented embolism of the iridic angle 703
Irido-sclerectomy 525
——— ——— ——— (Lagrange's operation), the conditions essential to success in 522
Iris, and ciliary body, diseases of the 803
—— confluent or conglomerate tubercle of the, treated by tuberculin ... 1003
—— cysts of the 377
—— patterns and blood vessels of the 906
Iritis, acute, in rheumatoid arthritis ... 11
—— and inflammation of the parotid glands, connection between ... 83
—— ætiology of 801
—— in general disease 801
—— in the course of Bright's disease 800
—— is there a diabetic? 134
—— rational treatment of 547
—— symptoms of 801
—— syphilitic nature of, difficulties in the diagnosis of 800
—— treatment of 545, 801
—— with hypopyon occurring in patient operated on for cataract 53
—— with special reference to gonorrhœal iritis 802
Iron, cataract due to, clinical note on 53
—— splinters, removal of by the electro-magnet 37

Jaw and upper eyelid, associated movements of 22

PAGE

Jequiritol in eye diseases 615
——— in the treatment of corneal and conjunctival affections ... 920
Jequirity, therapeutic action of in cases of carcinoma ... 125, 388
——— use of in trachoma 548
Juvenile tabes dorsalis 527
Juvenile Tabes, ocular manifestations of 97

Keratitis, exanthematous superficial, in measles and other exanthemata 50
——— neuroparalytic, and its relation to the removal of the Gasserian ganglion ... 283
——— neuropathic, bacteriological aspects of 816
——— parenchymatosa 719
——— parenchymatous, of traumatic origin 185
——— parenchymatous, unusual case of 184
——— thyroid extract in 676
Keratoconus, pathology of 704
Keratomycosis aspergillina, contribution to the knowledge of 33
Killian frontal sinus operation: remarks on the use of X-ray in sinus disease 298
Knife, a new, for dividing membranes after cataract operations 723
Koch's old tuberculin in diseases of the eyes, experiences with 390
——— tuberculin in eye disease ... 496
Krönlein's operation 36
——————— for an orbital tumour of ten years' standing... 328
——————— for orbital sarcoma 105

Lacrymal gland, cyst of the 988
——— passages, permanent drainage of the 457
——— problems, further notes upon 458
——— sac, a case of unilateral congenital fistula of the, with a review of the literature 912
——————— extirpation of with the raspatory 456
——————— notes on 310 consecutive operations for extirpation of the... ... 463
——————— pneumocele of the ... 374
——————— protheses for the ... 456
Lacrymo-nasal passage, the valves of the 900
Lagrange's operation for glaucoma 363, 522
——————— of sclerectoiridectomy, used for treatment of a case of glaucoma 416

PAGE

Lancereaux and Panlesco, method of treatment of pulsating exophthalmos 318
Lens, depressed, prolapse of, into the anterior chamber 54
——— displacement, other than those of traumatic origin, treatment of ... 1002
——— implantation of epithelium in the 702
——— mechanism of traumatic tearing and sub-conjunctival dislocation of the 1008
Lenses, bifocal 691
——————— some new forms of ... 19
——— convex test, for verifying strong concave glasses 722
——— decentering of 206
——— some prismatic effects of ... 15
Lepra ophthalmica in Ceylon 70
Lid, upper, a plastic substitute for ... 398
Lids and eyes, paradoxical associated movements of the 135
Light and colour-sense of day birds ... 204
Light-sense in strabismus, especially in amblyopia of strabismus 540
Light treatment in diseases of the eye 45
Light, ultra-violet, effects upon the eye 806
Lightning, injuries of the eye from .. 543
Limbus, tumours of the 701
Lipæmia retinalis 538
Localization of foreign bodies in the eye with the X-Ray ... 381
Lumbar puncture in optic neuritis from intracranial hypertension ... 920
Lupus of conjunctiva and cornea cured by radiotherapy 125
Lymph circulation of the eye and the genesis of glaucoma 418
Lymphangioma cavernosum of the conjunctiva and orbit, clinical and pathological aspects of the ... 24
Lymphoma of the semilunar fold ... 702
Lymphomatous tumours of the lacrymal gland and orbit 327

Macula, on the yellow colouration of the 441
——— senile affections of the ... 133
Macular holes, cases illustrating the formation of 1009
Magnet for removing steel from the eye 722
Malaria, ophthalmic symptoms complicating two cases of 135
Male fern amaurosis 526
Marksmen, vision of 207
Massage, vibratory, in eye diseases ... 841
Measles, monolateral infective optic neuritis following 448
Melanosarcoma of the choroid and orbit 325

PAGE

Melanosarcoma of the conjunctiva, with remarks on pigmented tumours of this structure 989
Melanosarcomata, primary, of the ocular adnexa, the therapy and the pathological anatomy of the 999
Melanotic epithelioma of the caruncle 989
——— tumour of the orbit 329
Mental diseases and the pupil 42
Mercuric oxycyanide 115
Mercury and iodine, dangers of employing simultaneously compounds containing 843
Mesotan, pyemia, orbital cellulitis, and death following the use of ... 309
Metastatic infection of the eye... ... 618
——————— associated with (a) cerebro-spinal meningitis, (b) typhoid fever 553
——— neuro-retinitis 556
——— ophthalmia due to the bacillus hæmophilus of Pfeiffer ... 32
——— ophthalmia due to the fusiform bacillus of Vincent 32
——— panophthalmitis, study of 1008
——————— suppurative, produced by the staphylococcus pyogenes albus (bacteriological investigation)... 179
——— sarcoma of optic nerve and retina 986
——— suppurative tenonitis ... 538
Microphthalmia, a case of 556
——————— three cases of ... 910
Microphthalmus, with extensive colobomata, and other congenital defects in both eyes 911
Middlemore prize, 1908, awarded to Mr. Simeon Snell 224
Migraine, to what extent is it amenable to treatment of the eyes 842
Mikulicz's disease with pronounced tubercle of the iris, case of ... 172
Miners' nystagmus 631
Miotics versus iridectomy in the treatment of simple chronic glaucoma 1006
Mirror writing 156, 185
Miscellaneous 130, 551, 1007
Mitin : a new excipient... 602
Mitral disease with embolism of the central artery of the retina in a child of 9 years 637
Moro's method in treatment of eye disease 502

PAGE

Morphine derivatives, value of in ocular therapeutics 842
Morphology of "phacocele" 704
Movements, associated, of the eyes and head... 132
Mucocele, fronto-orbital 295
——— of the accessory nasal sinuses 301
——— of the right frontal sinus, a rare case of... 305
Municipal treatment of ophthalmia neonatorum 529
Muscle, new operation for the shortening of 396
Muscle-spindles in the ocular muscles 641
Muscles oculo-motor, in organic hemiplegia 205
Mydriatics and myotics 607
Myopia 833
——— and syphilis 626
——— associated with opacities of the cornea 835
——— cavernous atrophy of the optic nerve in 837
——— correction of 837
——— true cause of 836
Myotics versus iridectomy in the treatment of simple chronic glaucoma ... 1006

Nasal accessory sinuses, relation of diseases of the eye to 285
—— disease with ocular complications 297
—— origin, ocular diseases of ... 297
—— sinuses, suppuration of the, connection of with inflammatory affections of the orbit and the eye 289
Neonatorum, blennorrhœa, case of .. 111
Nervous system, some diseases of the colour and light sense in 554
Neuritis, classification of cases of 131
——— optic 446
——————— a study of 36 consecutive cases 243
——— retrobulbar, prognosis of ... 1010
——— toxic retrobulbar 554
Neuro-fibromata, multiple 989
Neuro-fibromatosis of the fifth nerve with buphthalmos 988
Neuropathic keratitis 816
Neurotic family history and paralysis of the external rectus.. 133
Night blindness 131
——— ——— urotropine in... ... 644
Nizin in eye work 615
Noah's ark test types 768
Nose, accessory sinuses, empyema of the, complicated by orbital abscess... 294
—— and accessory cavities, affections of the, ocular symptoms produced by 294

PAGE

Nose, operation upon [the, followed by blindness 275
—— posterior sinuses of the, affections of and their connection with the optic nerve 295
Notes and echoes 66, 148, 222, 339, 405, 474, 559, 732, 936, 1024
Novelties 349, 495, 590, 684, 768, 872, 957
Nystagmus 631
———— mechanism of 412
———— miners', from a medico-legal standpoint ... 632
———— miners', some thoughts on 631

Obesity, general, and optic atrophy 815
Obituary ... 154, 219, 405, 474, 652, 739, 936, 1024
Obstructive disease of the retinal vessels 453
Ocular and dental stigmata of inherited syphilis 715
—— and orbital complications of disease of the accessory nasal sinuses 235
—— birth injuries 198
—— complications of pregnancy ... 981
—— complications of xeroderma pigmentosum 831
—— dermoids, origin of 987
—— diseases of nasal origin ... 297
—— infections, the rôle of the pneumococcus in ... 165
—— investigations on the ophthalmo-reaction 107
——lesions, concomitant, treatment of in the therapeusis of epilepsy 624
———— of general arterio-sclerosis 634
—— manifestations of hysteria ... 708
—— metastases 538
—— muscles, muscle-spindles in the 641
———— newer operations on the 883
———— sarcoma of the ... 332
———— traumatic paralysis of the 316
—— physiology, observations of, on the field of vision 132
—— self-mutilation 804
—— signs and complications of accessory sinus disease ... 290
—— surface, sensibility of the ... 441
—— symptoms of nasal origin ... 305
—— syndrome, sympathetic .. 136
—— therapeusis, on the use of cold and of heat in... 923
—— therapeutics, the use of brushes in 546
—— therapeutics, value of the injections of sterilised air in... 549
—— traumatism in insane patients... 804
—— typhoid re-action 536
——tuberculin test, a serious result of 711

PAGE

Ocular tuberculosis 701
—— motor muscles in organic hemiplegia 205
Oily collyria 598
Ointment diluter 684
Operations 394, 455
Operations, a review of some of the newer operations upon the eye and its appendages 875
———— for after-cataract 970
———— for filtering cicatrices ... 483
Operations on the orbit 105
———— sixty-one eye operations in one day 458
Operative procedure for the removal of superficial malignant growths 646
———— procedure in relation to disease of the frontal and sphenoidal sinuses ... 308
———— treatment of optic neuritis 658
Ophthalmia gonorrheal 119
———— neonatorum ... 2, 112, 342
———————— British Medical Association's Sub-Committee ... 223, 654, 938
———————— municipal treatment of ... 529
———————— report of Committee of the American Medical Association, 1908 ... 427
———————— some recent British work on 350
———————— the alleged diminution of 8
———— phlyctenular, pathogeny and treatment of ... 546
———— sympathetic ... 43
———————— clinical and therapeutic considerations with regard to 924
Ophthalmic conditions in the Government Schools of Egypt and their amelioriation 856
Ophthalmic Surgeon, the share of, in the operative treatment of the accessory sinuses of the orbit ... 888
———— tuberculin test 711
Ophthalmitis, transferred, preventive treatment of 531
Ophthalmologist, position of the, in the treatment of diseases of the accessory sinuses of the nose ... 303
Ophthalmology, a diploma in ... 562

PAGE

Ophthalmology and its relationship to other departments of Science 131
——— part played by psychoneuroses in 99
Ophthalmology, the contribution of to the diagnosis of arterio sclerosis ... 634
Ophthalmoplegia externa, congenital, case of incomplete... 678
Ophthalmo-reaction 107, 108, 990
——— and affections of the eye 628
——— the dangers of the 990
Ophthalmoscope, a bi-manual 872
——— portable illuminative attachment for 590
Ophthalmoscopic lesions in a case of amaurotic family idiocy 911
Ophthalmo-Tuberculin test, value of the, in the surgical treatment of orbital disease 952
Opsonic index (Wright's) 505
Optic atrophy and general obesity 815
——— high tension cupping and 829
Optic canal, fracture of 454
——— disc, a curious vascular anomaly of the 623
——— abnormal pigmentation of the 909
——— primary tuberculosis of the 981
——— nerve, a little-known typical abnormality at the entrance of the 912
——— and retina, metastatic sarcoma of 986
——— in connection with affections of the posterior sinuses of the nose ... 295
——— removal of tumours of the 106
——— neuritis 446
——— after diseases of the posterior ethmoidal cells 306
——— after injury or disease of the anterior half of the eyeball 625
——— due to the sting of an insect 448
——— from cold 447
——— in cerebral tumours ... 620
——— monolateral infection, following measles ... 448
——— of pregnancy 453
——— operative treatment of ... 658
——— peripheral, surgical treatment 449
——— study of thirty-six consecutive cases ... 243, 400

PAGE

Orbit, accessory sinuses of the, the share of the ophthalmic surgeon in the operative treatment of the 888
——— and cranium, dermoid cyst of the 328
——— anterior opening of, in Swedes and their relationship to myopia 834
——— case of arterio-venous aneurism of the 318
——— cylindroma of the, in a child ... 329
——— cysticercus of the orbit ... 331
——— **diseases of the** 309
——— epithelioma of the 324
——— foreign bodies in the 314
——— inflammatory affections of the, in connection with suppuration of the nasal sinuses ... 289
——— **injuries to the** 313
——— intravascular endothelioma of the 330
——— left, traumatic aneurism of the 319
——— mucous cyst of the 328
——— operations on the 105
——— plexiform neuroma of the ... 326
——— phlegmon of the, simulating a malignant growth and its origin from the ethmoid cells 294
——— sarcoma of the 330
——— spontaneous arterio-venous aneurism of the 319
——— spontaneous hæmorrhages within the 311
Orbit, tumours of the 322
Orbital abscess, blindness following, anatomical basis of 277
——— a rare path of infection 309
——— secondary to nasal disease 308
Orbital anæsthesia 898
——— cellulitis, two fatal cases of ... 311
——— disease, note on the value of the ophthalmo-tuberculin test in surgical treatment of ... 952
——— fibroma 326
——— inflammations, relations of to disease of the nasal sinuses 306
——— manifestations of nasal sinusitis, frequency of 228
——— sarcoma... 324
——— tumour of ten years' standing, endothelioma; Krönlein operation ... 328
——— spontaneous healing of an, which had been diagnosed as sarcoma 334
——— tumours, extirpation of with preservation of the eye 105
Orbital veins 274
——— in man 274
Orbits, bilateral gumma of the, in a child eight years old 310

PAGE

Osteoma of the ethmoid bone 289
——— of the frontal sinus 134
——— of the orbit, successfully treated by operation 325
Osteoma of the orbit 331
Osteomyelitis of the superior maxilla and of the ethmoid with empyema of the sinuses and orbit 298
Osteo-periostitis consecutive to frontal sinusitis 293
Oxford Ophthalmological Congress ... 653
Oxidation, treatment of constitutional disease of the eye through ... 843
Oxycephaly 530

Paintings of colour-blind artists ... 820
Palpebral apertures, narrowed, of the eyes 906
——— conjunctiva, primary tumour of, accompanied by tumour of the cornea 705
——— epithelioma, history of a ... 987
——— margin in man, structure and development of the ... 39
——— sporotrichosis 973
Panophthalmitis and hypopyon keratitis from bacillus subtilis 33
——————— following penetration of a piece of whip-lash into the vitreous 33
Papillary stasis, central vein of the retina in 450
——————— (choked disc), following meningitis, recovery 447
Papillitis after injury or disease of the anterior part of the eye 625
Papilloma of the conjunctiva treated with the X-ray 545
Paralysis, oculo-motor, electro-diagnosis of 540
——— of accommodation in diabetes 718
——— of the external rectus and neurotic family history ... 133
——— of the third nerve 133
——— traumatic, of the ocular muscles 316
Parenchymatous keratitis of traumatic origin ... 185
——————— unusual case of 184
Parinaud's conjunctivitis ... 199, 637
——————— a case with corneal lesions 639
Parotid glands, inflammation of the, and iritis, connection between ... 83
Pathognomonic eye symptom in rabies 707
Pathology 699
Pathology and treatment of simple chronic conjunctivitis 201
Pathology of the pupil... 513

PAGE

Peripheral optic neuritis, surgical treatment 449
"Phacocele," morphology of 704
Phlyctenular keratitis and pustular episcleritis treated by staphylococcic injections 1004
Phorometer, a simple, for measuring heterophoria in near vision ... 722
Photography of the fundus oculi ... 899
Photoptometer of Hori, practical value of 721
Physiology, ocular, observations of, on the field of vision 132
Physostigmine, diagnostic value of, in anomalies of the pupil—reflex ... 101
Picric acid 614
——————— in the treatment of chemical burns of the eye 128
Pigeons and hens, on adaptation and visual purple in 204
Pigmentary degeneration of the retina, visual fields in 897
Pirquet's method in treatment of eye diseases 498
Plexiform neuroma of the orbit ... 326
Pneumo-bacilli, case of corneal ulcer due to 180
Pneumocele of the lacrymal sac ... 374
Pneumococci, superficial affections caused by, treatment of by rabbits' bile ... 389
——————— vaccine in the treatment of eye disease 507
Pneumococcus, cases of pseudo-membranous conjunctivitis due to 111
——————— conjunctivitis 113
——————— concerning our knowledge of (a letter) ... 724
——————— the rôle of in ocular infections 165
Pneumonia, bacteriological examination of the conjunctival sac in... ... 32
Posterior capsular opacities after operation for cataract 51
Posterior scleritis 123
——— venæ vorticosæ, the study of the... 910
Potassium chlorate, use of in eye work 776
——— iodide 612
——————— in the treatment of cataract 546
——————— in the treatment of incipient cataract 593
Pregnancy, ocular complications during 981
——————— optic neuritis of 453
Prenatal irido-cyclitis; buphthalmos; inherited syphilis 803
Protheses for the lacrymal sac ... 456

PAGE

Psychoneuroses in ophthalmology ... 99
Ptosis of the eyelid, treatment of ... 397
— treated by cautery 767
Pulsating exophthalmos 317
— — — — — — — — — — treated by excision of a dilated orbital vein... 321
Pulsation in a vena vorticosa 624
Pupil and mental diseases 42
— general pathology of the... ... 513
Purulent conjunctivitis 111
Purulent ophthalmia, treatment of ... 124
Pustule, malignant, of the eyelids, prognosis of 191

Rays, ultra-violet, protection of the eyes from 552
Rabbit's bile 614
Rabies, a new eye symptom in 707
Radio-therapy as a cure for lupus of conjunctiva and cornea 125
— in eyework 779
— treatment of facial neuralgia by 843
Radium, action of, upon the tissues of the eye 839
— can trachoma be cured with ? 921
— use of, in eyework 782
Refraction work, when and how shall we use cycloplegics in 694
Remedies ... 387, 641, 838, 918, 998
Remedies, some newer, in eye work 598, 932
Removal of iron splinters by the electro-magnet 37
Rémy's diploscope, construction, technique, and theory of 954
Retina, central vein of the, in papillary stasis 450
— cyanosis of the, in case of stenosis of the pulmonary artery 134
— detached, surgical treatment of 124
— detachment of the 813
— detachment of the, cured by a blow on the head . .. 814
— embolism of the central artery of the 701
— family degeneration of the, with idiocy 534
— in glaucoma cup 827
— obstruction of the central artery of the, in a girl of 15 years... 636
— visual fields in pigmentary degeneration of the 897
Retinal detachment, ætiology of ... 552
— function and time reaction ... 131
— signs of high arterial tension.. 634
— vessels, obstructive disease of the 453
Retinitis proliferans, ætiology of ... 700
— punctata albescens 188

PAGE

Rheumatic iritis, so-called ... 802
Roentgen rays, action of, upon the human eye 925
— the action of on the human eye ... 555

Sal ammoniac in corneal opacities... 777
Saline injections, painless sub-conjunctival injections 388
— solution isotonic with the tears, advantages of as an eye-wash ... 550
Salts of silver, organic, incompatibilities of 547
Sarcoma of the orbit, and of the middle cranial fossa 330
— orbital... 324
— Kronlein's operation for 105
Schlemm's canal, venous connections of 519
School children, the eyesight of .. 915
Sclera, collapse of the, during a cataract operation 459
— cysts of the 989
— rupture with prolapse of the retina.. 555
— thinning of the, blue discolouration due to a congenital and hereditary anomaly... ... 911
Sclerochoriotomy in the treatment of glaucoma 397
Sclerotomy and glaucoma 826
— simple anterior 400
— — — — — — in glaucoma 818
— — — — — — in chronic simple glaucoma 770
Scleritis posterior 123
Sclerosis multiple, greenish discolouration of the cornea in 541
Scotometer, a new 867
Sea water injections in eye affections of a lymphatic nature 125
Sections, serial, of the eyes embedded in celloidin ; method of obtaining 426
Senile affection of the macula 133
Septic panophthalmitis 617
— retinal changes in tyhoid fever 618
Sero-therapy in eye work 797
Serum, anti-diphtheritic, in the treatment of diseases of the eye ... 511
— — — — — — ocular infections treated with .. 1005
Serum diagnosis 508
— therapy 508
— — — — in diseases of the eye... 940
— — — — in ophthalmic work ... 1006
Serum, Yeast, in the treatment of eye diseases 513, 940, 1000

	PAGE
Sheffield School for the Blind, inquiry into the cause of 333 cases ...	121
Sideroscope, a method of removing the disturbing influence of the electric car system upon the	383
Sight in nystagmus	631
Silver, organic preparations of, in the treatment of conjunctivitis ...	643
Simple chronic conjunctivitis	201
Sinus, cavernous, case of thrombosis of, following orbital thrombophlebitis	280
—— disease, accessory, ocular signs and complications of	290
———— use of X-ray in ...	298
—— frontal, disease, some personal experiences with	301
Sinuses, accessory	284
———— malignant disease of the	253
———— nasal, mucocele ..	301
———— to the nasal cavities in their relations to the orbit, etc., the applied topographical anatomy of	259
———— frontal and sphenoidal, operative procedures in relation to	308
———— bilateral painless dilation of the due to disease of the lining mucous membrane	306
Sinusitis, dacryocystitis and maxillary, due to gonococci in a newly-born child	296
———— frontal, clinical, and therapeutical considerations respecting two cases of	299
———— frontal-ethmoidal, case in which spontaneous evacuation took place in the orbit	291
———— frontal, osteo-periostitis consecutive to...	293
———— maxillary, of babies, exophthalmos in the	307
Skull deformities, eye changes in ...	530
Small-pox vaccine	507
Sodium salicylate in eye work... ...	778
———— treatment of sympathetic inflammation of the eye by	839
Sophol in eye work	644
Spectacle diagram, an improved ...	495
———— lenses, decentering of ...	206
Spectacles, platyscopic, for the partially blind	874
Sphenoidal sinusitis, cerebral and ophthalmic complications in ...	287
———— two cases of blindness due to ...	295
Spring catarrh	632

	PAGE
Sporotrichosis of the eyelid	973
Spud, an illuminated	724
Squint	48
— congenital	909
———— in adults, treatment of, without operation	485
———— nature of two curious facts that throw light on	48
Squinting people, normal and abnormal retinal localisation in	49
Standardisation of trial lenses ...	654
———— ———— some recent British work upon	686
———— ———— some recent British work on (correspondence)	1022
Staphylococcal infections of the eye and their treatment with vaccine	566
Staphylococci injections in the treatment of phtyctenular keratitis and pustular epicleritis	1004
———— ———— sub-conjunctival abscess due to	618
———— ———— vaccine in treatment of eye disease ...	507
———— ———— ———— use of in the treatment of hypopyon ulcer ...	79
Staphyloma, congenital anterior, pathological examination of a case of	551
Stereoscopy and visual projection ...	131
Sterilised air, the therapeutic value of subconjunctival injections of ...	548
Sting of an insect, unilateral optic neuritis due to	448
Strabismus, concomitant, surgical treatment of	991
Strabismus in children, surgical treatment of	49
———— in relation to hereditary syphilis	48
———— ———— the light-sense in	540
Streptococcal infection of the eye and its surroundings in impetigo streptogenes	620
Streptococcic conjunctivitis	115
Streptococcus infection of eyelids treated by antistreptoccus serum	647
Subconjunctival abscess due to staphylococci	618
———— ———— cysticercus, cases of...	59
———— ———— extraction of cataract	696
———— ———— ———— injections	839
———— ———— ———— injections in hypopyon keratitis	125
———— ———— injections of air ...	551
———— ———— ———— ———— of sterilized air	602
———— ———— ———— painless saline injections	388
Superficial sensibility of the eyeball ...	441

PAGE

Surgical treatment of concomitant squint 991
Sympathetic disease 43
Sympathetic ocular syndrome 135
Symptom-complex, a new 820
Syphilis, acquired, some cases of interstitial keratitis from ... 539
——— and myopia 626
——— hereditary, rare and complex ocular and dental stigmata of 715
——— hereditary, strabismus in relation to 48
——— pathologico-anatomical changes in the blood-vessels of the eye in 713
Syphilitic lesions of the eyelids ... 117

Tabes dorsalis, juvenile 528
——— symptoms and diagnosis of 527
Tabes, juvenile, ocular manifestations of 97
Tabetic eye 186
Tabetic optic atrophy 118
Tattooing, method to determine beforehand the optical result of 399
——— the cornea 459
——— the eye, new method of ... 396
Tay's infantile retinitis, some cases possibly allied to 534
Tenonitis 538
Test for binocular vision 706
Test types, Noah's Ark 768
Testing the vision in school children ... 916
Tetany, cataract as a premonitory symptom of 54
Thiosinamin and fibrolysin in eye work 793
——— in the treatment of corneal opacities 550
——— painless method of injecting 550
——— treatment of corneal opacities by 923
Thrombosis of the cavernous sinus following orbital thrombo-phlebitis 280
——— of the central vein ... 984
——— septic, of the cavernous sinus of orbital origin ... 281
——— venæ centralis 984
Thyroid extract in keratitis 676
——— origin, eye symptoms of ... 820
Toxic amblyopia, prognosis of ... 1010
——— retrobulbar neuritis 554
Trachoma blindness in Russia ... 119
——— can it be cured with Becquerel rays (Radium) 921
——— chronic, treatment of... .. 545
——— clinical aspects and successful treatment 548
——— ætiology and development ... 33

PAGE

Trachoma, origin and development of... 805
Trachoma prize 1026
——— prize for ætiology of ... 406
——— treatment of with concentrated light *ad modum* Finsen ... 925
——— use of jequirity in 548
Trachomatous dacryocystitis, treatment of 923
——— entropion of the upper eyelid, pathogenesis and radical cure of ... 194
——— pannus, treatment of by inoculating the eye with gonnorhœal pus 644
Transferred ophthalmitis 531
Transillumination of the eye 959
Transitory myopia 835
Transplantation of the cornea ... 49, 717
Traumatic aneurism of the left orbit ... 319
——— arterio-venous aneurism of the right orbit with pulsating exophthalmos ... 321
——— enophthalmos ... 376, 917
Traumatic glaucoma 57
——— myopia 834
——— pulsating exophthalmos, spontaneous cure of ... 321
——— tearing and subconjunctival dislocation of the lens, mechanism of 1008
Treatment 124, 544
——— of wounds of the eye ... 842
——— serum 511
Tubercle in the right eye, solitary quiescent ("obsolescent") associated with tubercular glands in the neck ... 199
——— of the choroid and the diagnosis of tubercular disease 199
——— of the choroid, treated by tuberculin 1002
——— of the iris, treated by tuberculin 1003
——— of the iris, with Mikulicz's disease, case of 172
Tuberculin in the diagnosis and treatment of diseases of the eye 842
——— in the treatment of confluent or conglomerate tubercle of the iris ... 1003
——— in the treatment of solitary or conglomerate tubercle of the choroid 1002
——— new; therapeutic value of 392
——— (tubercle vaccine) and its modifications 503
——— test 711
——— treatment (Spengler's) ... 506

	PAGE
Tuberculin treatment v. Hippel's ...	503
—— —— tuberculosis of the iris, diagnosed and treated by	1000
Tuberculosis and aspergillary pseudo-tuberculosis of the choroid	542
—— ocular	701
Tuberculosis of the choroid... ...	198
—— of the iris diagnosed and treated by tuberculin	1000
—— primary, of the optic disc	981
Tulase-lactin (v. Behring's)	507
Tumour and other lesions of the cerebrum, disorders of the associated ocular movements in	629
—— deep in the orbit	329
—— intra-nasal, case of	289
—— orbital, spontaneous healing of an	334
Tumours	985
—— lymphomatous, of the lacrymal gland and orbit ...	327
—— of the caruncle	718
—— of the limbus	701
—— of the optic nerve, removal of with preservation of the eye	106
—— **of the orbit**	322
—— orbital, extirpation of, with preservation of the eye ...	105
—— primary of the palpebral conjunctiva and of the cornea ...	705
Typhoid fever, bacteriological examination of the conjunctival sac in	32
—— septic retinal changes in	618
Ulcers of the cornea, treatment of ...	545
Ulcus serpens, light treatment in ...	45
Ultra-violet light, influence of upon the eye	807
Unilateral Argyll Robertson pupil, following oculo motor paralysis caused by wound in the orbit ...	315
University of Oxford, Department of Ophthalmology	480
Urotropine in night-blindness	644
Vaccination, accidental, of the conjunctiva	210
Vaccine and serum, diagnosis and treatment in eye disease, present position of	496
—— in the treatment of staphylococcal infections of the eyes ...	566
Vacher and Pansier, a modification of the methods of	394
Valves of the lacrymo-nasal passages ...	900
Vascular changes in syphilis	713
—— membrane in vitreous ...	164
Vena vorticosa, abnormal, spontaneous pulsation of a	624
Vernal conjunctivitis, radical cure of ...	546
Venous connections of Schlemm's canal	519
Vibratory massage in eye diseases ...	642
Vision	207
—— activity of, and hearing ...	207
—— binocular, test for	706
—— of marksmen	207
Visual acuity	207
—— and form-sense ...	207
—— uniform scale for the estimation of	207
—— deficiency, affecting responsible employees in the marine and railway services ... 159,	344
—— fields in pigmentary retinitis ...	897
Vitreous blood-vessels in the, new formation of	1008
—— body in movements of the eye, ætiology of retinal detachments	552
—— vascular membrane in ...	164
Volkmann, electro-magnet in eye surgery	381
Vomiting caused by latent ocular deviations...	384
Wohlfahrt fly, eye diseases caused by the larva of	133
Woodcock's method in treatment of eye disease	502
Word-blindness, congenital	808
Wounds of the eye, surgical closure in	924
Wright's opsonic index	505
Xeroderma pigmentosum	831
—— a case of affecting the eye	913
Xerosis (Correspondence)	65
X-ray, localization of foreign bodies in the eye with the	381
—— use of in sinus disease	298
X-rays, use of in eyework	780
Yeast serum in the treatment of eye diseases 513, 940,	1000
Yellow colouration of the macula	441
Zonulotomy	460

THE

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CONTENTS.

Original Communications—

1. H. Carter Mactier, M.B.—Ophthalmia Neonatorum 2
2. Ernest Thomson, M.D.—A Note regarding the Alleged Diminution of Ophthalmia Neonatorum 8
3. J. Barnes Burt, M.D.—Acute Iritis in Rheumatoid Arthritis ... 11
4. A. S. Percival, M.B., B.C.—Some Prismatic Effects of Lenses ... 15
5. W. A. Dixey. Some New Forms of Bifocal Lenses 19

Clinical Memorandum—

1. Sydney Stephenson.—Associated Movements of Upper Eyelid and Jaw 22

Translation—

Dr. Bruno Wolff.—Injuries to the Eyes of the Child During Labour ... 23
(*Continued.*)

Current Literature—

I. Bacteriology 32
II. Krönlein's Operation 36
III. Removal of Iron Splinters by the Electro-Magnet 37
IV. Anatomy and Development of the Edge of the Eyelid 39
V. The Pupil and Mental Diseases 42
VI. Sympathetic Disease 43
VII. Light Treatment in Diseases of the Eye 45
VIII. Squint 48
IX. Transplantation of the Cornea 49
X. Exanthematous Keratitis 50
XI. Cataract 51
XII. Dislocation of the Eyeball through the Palpebral Fissure ... 57
XIII. Traumatic Glaucoma 57
XIV. Cysticercus in the Eye 59

Reviews 61

Correspondence 64

Notes and Echoes 66

ORIGINAL COMMUNICATIONS.

OPHTHALMIA NEONATORUM.

Synonym: Blennorrhœa Neonatorum.

BY

H. CARTER MACTIER, M.B.

WOLVERHAMPTON, ENGLAND.

By the term ophthalmia neonatorum is meant a purulent ophthalmia arising in the new-born infant within less than five days of birth, and generally on the third. This ophthalmia is not necessarily gonorrhœal, since in many of the cases the gonococcus cannot be detected. Any case of blennorrhœa arising later than the fifth day after birth is not due to infection at that time, and is therefore not a true ophthalmia neonatorum (Fuchs).

Symptoms.—At a time varying from a few hours to a few days after birth, the eyelids become swollen and red, and there is a discharge of a more or less purulent character. The symptoms increase in severity with great rapidity, and soon, instead of eyes, there seem to be two enormous abscesses in the sockets from which a continuous stream of pus issues. Of course, all cases are not so severe as this ; and, as a rule, the longer the time which elapses between birth and the onset of the disease, the less virulent the attack. A mild form of catarrhal ophthalmia often appears some three weeks after birth, but this, except in rare cases, is neither specific nor dangerous.

Etiology.—From the definition above, it follows that a genuine ophthalmia neonatorum is caused by infection at the time of birth, and this considerably narrows the field of investigation, since it practically leaves only one source of infection, *viz.*, the vagina of the mother ; other sources, such as sponges and cloths, being primarily infected by the vaginal discharge, either at the time of birth or immediately after. That this discharge must be pathological has been proved by the inoculations made by Zweifel, with the lochial discharges of perfectly healthy women, having no effect on the eyes of new-born infants (*Archiv f. Gynækologie*, Bd. xxii., p. 325).

In the normal state the vaginal discharge is of a whitish-grey colour, of the consistency of clotted milk, has an intensely acid reaction, and contains the vaginal bacillus. Of other micro-organisms, the oïdium albicans and the yeast fungus can sometimes be detected. But the pathological discharge is of a yellow colour, is feebly acid or even alkaline in reaction, and contains

various micro-organisms, the chief of which are the gonococcus, the staphylococcus, the streptococcus, the colon bacillus, and, although I cannot find it mentioned,* I believe the pneumococcus finds a habitat there, since it has been found in sufficient numbers in cases of ophthalmia neonatorum to warrant the suspicion that it was the cause of the disease (Parinaud, Morax, and Gasparrini). Since these bacteria will not live in the normal vaginal discharge, it must alter its character before they can take up their abode there, and this modification is caused by the copious alkaline efflux which comes from the uterus during menstruation, child-bed, or uterine catarrh, and is summed up by K. Menge as follows: "The normal conditions warding off the invasion of pathogenic bacteria are the various harmless bacteria and their products—the acid reaction, the secretion from the tissues, the leucocytes, and the insufficiency of oxygen. These safeguards are diminished in the new-born and in the adult during menstruation, and also where there is superabundant secretion from the cervix and uterus, or from the former alone. Infection is also apt to take place where the vulva gapes wide open and the vagina is everted." Therefore, had they previously found a nidus in any of the neighbouring parts, such as the cervix, the urethra, or the vulvo-vaginal glands, they would naturally invade the vagina when the normal safeguards were diminished at the time of labour.

In considering the vagina as a source of infection it has been mentioned that saprophytic germs may have found a nidus in the cervix, but the cervix and body of the uterus may be eliminated from the sources of infection, inasmuch as in nearly all labours the cervix has dilated and withdrawn from the head of the child before the membranes rupture, and these also, generally, form a protective covering to the face until it enters the vagina. Thus, it is clear that infection takes place in the vagina, whilst the child is passing through; those cases where at birth the corneæ of the child have shown perforation as a consequence of blennorrhœa being rare, may, I think, be neglected, since in such cases infection must have taken place *in utero*, and is therefore unpreventable. Therefore the question we have to deal with is how to prevent infection taking place in the vagina.

PROPHYLAXIS.

Historical.—At the beginning of last century, 1807, Gibson laid down the fundamental principles of prophylaxis in the following maxims:—

* Since writing this paper I have been informed by Mr. Sydney Stephenson that the pneumococcus has been found in the healthy vagina and also in cases of salpingitis. H. C. M.

(1) The leucorrhœa of the mother ought, if possible, to be cured during pregnancy.

(2) When this has not been done, the noxious secretions should be removed from the vagina during delivery.

(3) The infant's eyes ought, immediately after birth, to be cleansed with a fluid which either removes the noxious matter, or is able to prevent its injurious effects.

It is strange these maxims should have been forgotten, but until Bischoff in 1875 at Basle carried out the second and third, using carbolic acid solution for the vagina, and salicylic acid solution for the infant's eyes, nothing seems to have been done.

In 1876 Schiess, of Basle, published an essay on the subject, in which he directed the midwife to cleanse the eyes of the infant immediately after birth with a disinfectant; and since then many similar trials have been carried out and reported on.

In 1882, Credé published an account of his method, which is to cleanse the infant's eyes carefully with salicylic acid (2 to 100) and put into the conjunctival sac one drop of nitrate of silver solution (2%). He afterwards omitted the salicylic acid and used only water for cleansing. After adopting this method Credé had only 0·1% to 0·2% of cases of blennorrhœa out of 1,600 infants, whereas before this he had 10·8% out of 2,897.

Let us now consider prophylaxis at the present time. It has been proved that aseptic and antiseptic douches, before and during labour, have not been capable of eliminating the infective bacteria from the vagina. This is due to the difficulty of efficiently cleansing the upper parts of the passage, and also to the fact that those bacteria which have found a nidus in the neighbouring parts, *viz.*, the cervix, the urethra, and the vulvo-vaginal glands, invade the vagina as soon as its normal defences are withdrawn or diminished.

A douche, or, better, a tampon of cotton wool soaked in lactic acid, as recommended by Döderlein, placed in the vagina for twenty minutes or half an hour before the os dilates, should be used in all cases where gonorrhœal infection is suspected, or where the vulva gapes and the vagina is everted, since by this means the normal acidity of the vaginal discharge can in some measure be restored. The bladder should also be emptied in every case with a catheter, lest the gush of urine, which is otherwise bound to take place on the descent of the child's head, should carry infective bacteria into the vagina, or on to the child's face. Further, I am a strong advocate of rapid delivery, provided it can be done without laceration of the maternal parts, as soon as the os is fully dilated and the head fixed in the pelvis—that is to say, before the head has left the protective covering afforded by the membranes; and I

am certain a rapid delivery with forceps, not only cuts the labour short, and saves the mother unnecessary pain, but produces less maternal exhaustion, and also exposes the infant's eyes for a shorter time to an infection which may be detrimental to them. Haussmann thinks, and, I believe, rightly, that the greater frequency of attack in male infants is due to the larger male head taking a longer time to pass through the vagina, and therefore being more exposed to infection, than the head of the female, which, from its smaller size, passes through more rapidly.

Immediately the child is born, its eyes should be wiped with a clean cloth or a swab of cotton wool, particular care being taken not to use anything which has been soiled either by the maternal discharges or by the hands of surgeon or nurse, and the lids should be thoroughly cleansed of all the vernix caseosa before the infant opens its eyes, since it is by winking that any infective material, adherent to the lids or cilia, is introduced to the conjunctival sac.

If there is no reason to suspect a pathological state of the vagina, this, with a further cleansing of the lids and mucous membrane of the eyes with boric acid lotion, will be sufficient—the nurse being warned to avoid getting any of the water of the child's first bath near its eyes, and also, when using the boric acid lotion, to be careful to use a clean swab of cotton wool, and not the sponge with which she bathed it.

If, on the other hand, there is reason to suspect infection, after the eyes have been cleansed as above, a drop or two of argyrol, 20 per cent., should be instilled into each eye. The reason for using argyrol in preference to Credé's 2 per cent. solution of nitrate of silver has been very well set out by Dr. Darier, in a recent lecture on the organic silver salts, in which he says: "For many years nitrate of silver has been the classical specific for purulent ophthalmia, it being easily understood that those who are accustomed to practise the almost ancestral routine of this method of therapeutics would experience some little difficulty in going through a new course of apprenticeship with the object of obtaining . . . . . a little less danger and a little less pain . . . . . I have often reiterated the occasional very serious drawbacks in connection with nitrate of silver, but I cannot agree with the authors quoted by Dr. Alvarado, one of whom says that nitrate of silver is infallible in blennorrhœa, while another advances the opinion that nitrate of silver will never give any trouble to practitioners who take care of their patients. . . . . Let one of these fervent admirers of nitrate of silver, by way of comparison, instil into his right eye a drop of 1 per cent. solution of nitrate of silver, and into the

left a drop of 20 per cent. argyrol, and he will find the difference: very acute burning in the right eye, and entire absence of pain in the left. . . . . Of course it is easy enough to say that complications as regards the conjunctiva (eschars and pseudo-membranes), and the cornea (infiltrations or ulcerations), are due to the malignity of the affection, whereas, as a matter of fact, they are often due to excessive cauterization by too powerful solutions of nitrate of silver. . . . . By the use of frequent instillations of argyrol I have seen very serious cases of purulent conjunctivitis relieved in less than a week. . . . . Most of those who prefer the nitrate to the organic salts of silver do so because they have been unsuccessful with the latter in consequence of not having used sufficiently large doses, and not repeated them often enough."

Let us now consider those cases which, according to the definition, are not true ophthalmia neonatorum, but arise later than the fifth day. How are they produced?

First, there may be infection during the infant's bath, more especially the first; this has already been mentioned.

Then, on the days after birth, the lochial discharges of the mother may prove a source of infection, since in many of the poorer houses where, from the nature of things, the disease is most prevalent, the infant, having no cradle of its own, lies in the mother's bed; as a consequence of this, and also from want of cleanliness of the linen, hands, etc., infection may be conveyed to the baby's eyes.

And now let us take up that which more closely concerns the ophthalmic surgeon, *viz.*, **Treatment.** Should one eye only be affected, Buller's shield or a protective bandage, as used in the case of an adult, is of no service, and the best that can be done to prevent infection of the other eye is to impress on those having the care of the child the necessity of great cleanliness, the constant removal of pus and secretion, and making the infant lie on the affected side, so as to prevent the discharge flowing over the nose into the sound eye; further, as a prophylactic, a drop or two of argyrol, 20 per cent., should be instilled into the unaffected eye at least once a day.

When the disease is established, the patient should be seen by the surgeon at least once a day, and he should thoroughly cleanse the eyes with a perchloride of mercury lotion (1 in 10,000), a Desmarre's retractor being used, if necessary, to get a view of the cornea. The conjunctivæ should be brushed with 40 per cent. argyrol, and if there is any haziness of the cornea, atropin should be instilled. The nurse is to be given a 10 per cent. solution of argyrol, with directions to instil it twice a day, and

she should also be supplied with plenty of perchloride of mercury lotion (1 in 10,000) with which to cleanse the eyes thoroughly every half-hour, placing on the edges of the lids after each bathing some iodoform or boric ointment (gr. 10 *ad.* 1 oz. of vaseline).

Under this treatment I have seen some of the worst cases apparently cured in eight days. I say apparently, for I would like to emphasize Dr. Darier's statement in the lecture above quoted, namely, that it is just at the time when cure seems apparent, that precautions should be redoubled, and the number of applications should be increased; for with argyrol we get the reverse effect as compared with the nitrate of silver: the organic salt having an action which is rapid, gentle, and penetrating, induces a tolerance of the tissues to micro-organisms, and a premature discontinuance of treatment may lead to a relapse, which is always more difficult to cure.

The corneal complications should be treated on the same lines as affections of the cornea from other causes; but as the source of infection is difficult to eradicate, the successful treatment of the cornea is less certain than in purely corneal affections. Formalin (1 in 500) is a most useful application when the cornea is affected, and should be used two or three times a day in conjunction with the other remedies.

Should a relapse occur, it is then advisable to use the nitrate of silver, 2 per cent. for brushing the conjunctivæ, and gr. 4 *ad.* 1 oz. for instillation by the nurse; since by the former course of treatment the mucous membranes will have become accustomed to the salts of silver, and the more caustic salt will have a greater effect.

When the acute symptoms have subsided, a chronic hypertrophy of the conjunctiva may persist for many weeks. This condition is best treated *after the purulent discharge has ceased*, with one of the pure astringents, either copper or zinc sulphate (gr. 2 *ad* 1 oz.) instilled twice a day.

In conclusion, I would suggest that, as all midwives, since the Midwives Act came into force, are under the control of the county and municipal authorities, these bodies should insist on their being taught the prophylaxis necessary at the time of birth. The midwives should also be instructed to advise all those whom they are about to attend of the necessity of seeing a doctor should there be any vaginal discharge during pregnancy, more especially if it is of a purulent character, *i.e.*, if it differs at all from the description given of the normal vaginal discharge, and in all cases where the vulva gapes and the vagina is everted. I would put this duty on the midwives; first, because they often attend cases without medical men;

and, secondly, because they generally see more of the patient before the confinement, and therefore have a better opportunity of ascertaining whether there is any pathological state of the vagina, the more so as many women are averse to being examined by medical men before the actual time of labour.

Moreover, since there is, so far, no legislation in the United Kingdom with regard to this disease, which Professor Fuchs considers accountable for blindness in more than three hundred thousand people in Europe, the laity, more especially those connected with charitable institutions and organizations, who are likely to come in contact with women about to become mothers, or those who have the care of children, should be thoroughly informed of the dangers of the disease, which in most cases, unfortunately, is looked upon as a simple "cold" in the baby's eyes; and should have the necessity of at once taking the child to an ophthalmic surgeon if its eyes become red, or run with matter, impressed upon them.

A card like that issued by the Sheffield General Infirmary, which reads:—"When baby's eyes begin to look red and run with matter, take it at once to a doctor. It is very dangerous, and if not treated properly one or both eyes may be lost," might with advantage be distributed by the various charitable organizations or by the public health authorities.

Further, the teachers of obstetrics in our medical schools should lay more stress on the dangerous character of the disease, and on its prophylaxis, than is, I fear, done at present.

A NOTE REGARDING THE ALLEGED DIMINUTION OF OPHTHALMIA NEONATORUM.

BY

ERNEST THOMSON, M.D.,

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Have we any right to accept unreservedly the optimistic views of Sydney Stephenson, expressed on page 19 of his recent and striking monograph *: "Every ophthalmic surgeon will admit that cases of ophthalmia neonatorum are becoming scarcer day by day"? The opinion thus expressed is doubtless true of certain districts, but as soon as I read the paragraph I became sure in my mind that it was not true of Glasgow. I then made up statistics from the reports of the Glasgow Eye Infirmary for the thirteen years 1894 to 1906, both inclusive. These bore out the opinion that in this large industrial centre ophthalmia is certainly not diminishing day by day. It may be admitted, as reference

*Sydney Stephenson.—*Ophthalmia Neonatorum* (The Middlemore Prize Essay for 1907). Geo. Pulman & Sons, Ltd., 24, Thayer Street, London, W.

to the accompanying table will show, that there is a *tendency* to diminution, for the mean percentage of the last seven years of the series is less by 0·071 than that of the first six years. That is all that can be stated.

Mr. Simeon Snell holds similar views as regards Sheffield, if I recollect correctly what he stated at the recent meeting of the British Medical Association at Exeter.

In the table appended, the larger percentages of ophthalmia at Charlotte Street Out-patient Department are accounted for by its position in the east end of the City.

Table showing the total and percentage incidence of Ophthalmia Neonatorum at the two Out-patient Departments of the Glasgow Eye Infirmary from 1894 *to* 1906.

Year.	Out-Patient Department G.E.I.	Total New Patients at each department.	Total Ophthalmia cases at each department.	Percentage Ophthalmia cases at each department.	Total New Patients at both departments combined.	Total Ophthalmia cases at both departments combined.	Percentage Ophthalmia Cases at both Departments combined.
1894	Berkeley St.	8988	27	0.30	15267	76	0·49
	Charlotte St.	6279	49	0·78			
1895	Berkeley St.	9459	54	0·57	16520	125	0·75
	Charlotte St.	7061	71	1·00			
1896	Berkeley St.	10410	50	0·49	18111	115	0·63
	Charlotte St.	7701	65	0·84			
1897	Berkeley St.	10157	40	0·39	17384	75	0·43
	Charlotte St.	7227	35	0·48			
1898	Berkeley St.	11107	51	0·45	18669	108	0·57
	Charlotte St.	7562	57	0·75			
1899	Berkeley St.	11421	57	0·49	18794	103	0·54
	Charlotte St.	7373	46	0·62			

Mean percentage for six years 0·568.

Year.	Out-Patient Department. G.E.I.	Total New Patients at each department.	Total Ophthalmia cases at each department.	Percentage Ophthalmia cases at each department.	Total New Patients at both departments combined	Total Ophthalmia cases at both departments combined.	Percentage Ophthalmia cases at both departments combined.
1900	Berkeley St.	11483	71	0·61	18478	127	0·68
	Charlotte St.	6995	56	0·80			
1901	Berkeley St.	12270	30	0·24	19576	68	0·34
	Charlotte St.	7306	38	0·52			
1902	Berkeley St.	13102	54	0·41	20520	103	0·50
	Charlotte St.	7418	49	0.66			
1903	Berkeley St.	13988	41	0·29	22207	114	0·51
	Charlotte St.	8219	73	0·88			
1904	Berkeley St.	14310	41	0·36	22669	107	0·42
	Charlotte St.	8359	73	0.65			
1905	Berkeley St.	15829	78	0·49	25232	147	0·58
	Charlotte St.	9403	69	0·73			
1906	Berkeley St.	16115	73	0·45	25555	116	0·45
	Charlotte St.	9440	43	0·45			

Mean percentage for seven years 0·497.

ACUTE IRITIS IN RHEUMATOID ARTHRITIS.

BY

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The relation of iritis to "chronic rheumatism" has long been recognised. The form of chronic rheumatism with which this diseaseh as been hitherto associated is that following rheumatic fever, muscular rheumatism, or gonorrhœal rheumatism.

The following case seems to show a direct relationship between iritis and a rheumatoid arthritis which cannot be traced to any of the above causes.

Mrs. K. B., aged 42, a widow for six years, complained "of a bad eye and violent headache on the right side."

In July, 1905, she had a similar attack in the same eye, which, however, was not so painful. In June, 1905, whilst a patient in the Royal Free Hospital, suffering from rheumatoid arthritis, her eyes were "sore."

Previous illness.—Measles; scarlet fever; three bad attacks of influenza; during the last year, she has suffered from rheumatoid arthritis. There is no history of rheumatic fever.

Family history.—Father had three attacks of rheumatic fever, also one uncle suffered from rheumatic fever. She has two children, both of whom are healthy.

Present condition.—On examination she was found to be suffering from acute iritis of the right eye.

The examination showed:—

1. Marked circumcorneal injection and some general conjunctivitis.
2. The iris swollen and "muddy" and of a green-brown colour as compared with the other, which is grey.
3. The tension of the eyeball a little increased.
4. The pupil re-acted sluggishly to atropine.
5. The headache was very severe on the right side and extended as far back as the ear and down the face. The pain was worse at night and kept the patient awake.
6. A week later a well-marked posterior synechia appeared on the outer side.

Osteo-arthritic system.—In both knees well-marked soft creaking can be felt. There is some soft swelling on the inner side which is more obvious in the left knee than in the right.

The ring finger of the left hand flexed to angle of 35° from straight. The left wrist shows a slight difference in shape as compared with the right. The other joints are normal.

The skiagram of the left hand shows :—

An area of destruction in the distal end of the first phalanx of the ring finger (Fig. 1A.).

Fig. 1.

Irregularity of outline and "bossing" in the lower end of the radius on the outer side (Fig. 1B.).

The skiagram of the left knee shows :—

A well-marked bony outgrowth of the lower border of the patella, Fig. 2.*

General condition.—Heart and lungs were normal. A few well-marked freckles are seen on forearms. The nail of the ring finger on left hand shows a condition of chronic onychia.

Dr. Sainsbury has very kindly given me permission to publish the following notes of the case made while the patient was in the Royal Free Hospital :—

*I have to thank Dr. Ironside Bruce for taking the skiagrams, and for his description.

Fig. 2.

Patient was admitted under Dr. Sainsbury on March 28th, 1905, complaining of pain and swelling of larger joints.

Present state.—Patient pale. Conjunctivitis, and photophobia in both eyes. Sepsis round gums. Heart, lungs, and urine normal. Trophic changes in nails, especially of the toes.

Osteo-arthritic system.—Left knee flexed, swollen, especially inner side, pain on movement. Right middle finger flexed and swollen, right knee and both wrists swollen. The other joints normal.

Progress.—2nd May, 1905. Right wrist bends only to angle of 35°, creaking on movement.

Left wrist not quite so bad.

Right knee—crepitus—thickening in inner condyle and head of tibia.

21st May, 1905. Pain in sterno-clavicular joint.

31st March, 1905. White discharge from the vagina noticed, but pathologist found no gonococci.

31st March, 1905. Blood count, Red, 4,100,000.
White, 5,000.
Hæmoglobin, 52%.

Temperature.—First ten days reached as high as 101.4°F. once.
,, ,, 101°F. twice.
Other seven days up to 100°F. After this no pyrexia.

23rd June, 1906. Circumcorneal injection lower part of right eye, pain, and discomfort.

26th. Signs of commencing iritis. Atropine drops. Next day better.

General progress.—Massage and hot air caused marked but slow improvement.

July 1st. Patient was discharged very much better.

Conclusion.—The chief points of interest are :—

1. A complete account of the onset of the disease from the excellent notes taken in the Royal Free Hospital. By these notes the diagnosis of rheumatoid arthritis is fully established. Both gonorrhœa and rheumatic fever are excluded.

2. The first onset of iritis occurred within three months of the onset of the rheumatoid arthritis. The iritis resembles "rheumatic iritis" in its tendency to relapse and the severe pain produced by it.

3. The skiagrams show definite changes in the bones, such as are commonly found in rheumatoid arthritis.

This case is published to call attention to the fact that iritis may occur in rheumatoid arthritis and with the hope that it will lead to similar cases being recorded.

SOME PRISMATIC EFFECTS OF LENSES.

BY

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IT is frequently found that patients who require a different correcting glass for each eye complain of discomfort when reading. They tell us that the spectacles are "too strong, because they tire the eyes," yet on examination the power of each glass is found to be quite correct. The more observant of them (and these are few in number) tell us that they read more comfortably "when the glasses are crooked." It will be found that they mean by this that, instead of the spectacles lying horizontally across the nose, they are inclined so that the stronger glass is at a lower level than the weaker glass. This at once clears up the puzzling nature of their difficulty.

The glasses are properly centred for distance, but when reading they turn their eyes downwards, and look through the lower portion of their spectacles. As the glasses are of different strengths, the prismatic effect of this decentration is different in the two lenses.

The following is a typical case:—A patient wears R + 3 D, L + 5·5 D spectacles properly centred for distance. On looking downwards at a book situated 20° below the equatorial plane of the head and at a distance of 1/3 m. from the coronal plane passing through the centres of motility of the eyes, his right eye deviates downwards 21° 28′, while his left eye should deviate downwards 22° 51′ in order to obtain single binocular vision.

Now a difference of 1° 23′ in a vertical direction for the two eyes, even if it can be attained for a moment, is impossible to maintain for any length of time without extreme discomfort A vertical diplopia will result as soon as this effort is relaxed. This difficulty will be obviated by decentring the left glass 5·5 mm. downwards; or by decentring both glasses 9·8 mm. downwards. In the last case the fixation lines on being depressed 20° will traverse the optical centres of both lenses and therefore there will be no tendency to vertical diplopia for an object at that angle of depression. Of course, for reading at 1/3 m. distance there should also be the usual decentration inwards of 2·6 mm. so that not more than 3 m.a. of convergence should be employed.

The chief importance of these considerations concerns the correct prescription of double focus lenses for constant use. Let us consider the double focus spectacles required for a patient who has + 3 D of presbyopia and requires R + 3 D, L + 5·5 D for distance. I consider that the reading segments

should be much smaller than they are usually made—15 mm. + 7 mm. is amply sufficient. These segments should be placed at the lower margin of the glass and their geometrical centre should be 2·6 mm. to the inner side of the vertical mid-line of the distance glass. Now, the optical centre of the reading combination should be 2·6 mm. inwards from the mid-line and about 11·5 mm. below the level of the centres of the distance glasses. [This is on the assumption that the spectacles are 30 mm. in height, then $11{\cdot}5 = \frac{1}{2}(30-7)$]. Now, if H represents the horizontal displacement of the optical centre of the reading segment, and D represents the dioptric strength of the distance glass, and d that of the reading segment,

$$H\ d = (D + d)\ 2{\cdot}6 \text{ mm.}$$

i.e., for the right eye $H = \frac{3 + 3}{3}\ 2{\cdot}6 \text{ mm.} = 5{\cdot}2 \text{ mm.}$

and for the left eye $H = \frac{5{\cdot}5 + 3}{3}\ 2{\cdot}6 \text{ mm.} = 7{\cdot}4 \text{ mm. nearly.}$

Similarly the vertical displacement (V) of the optical centre of the reading segment is given by the expression

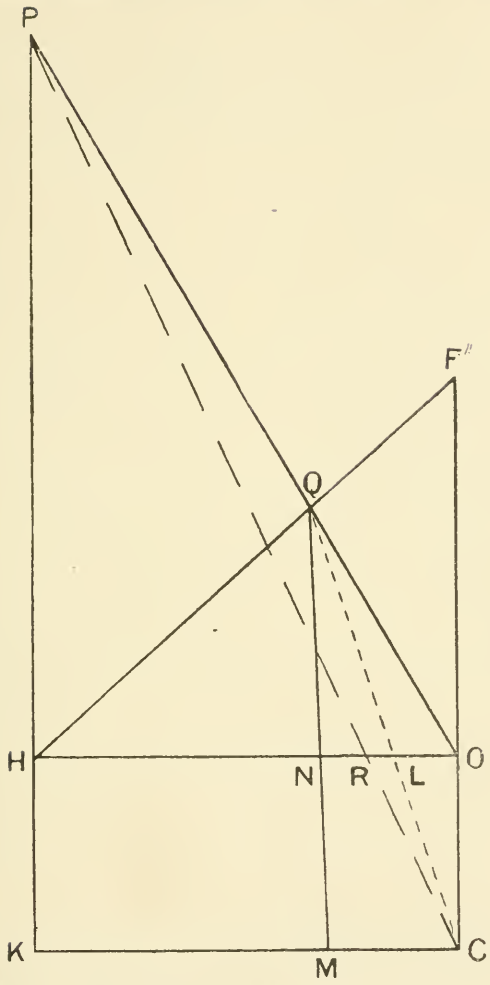
$$V\ d = (D + d)\ 11{\cdot}5 \text{ mm.}$$

i.e., for the right eye $V = \frac{3 + 3}{3}\ 11{\cdot}5 \text{ mm.} = 23 \text{ mm.}$

and for the left eye $V = \frac{5{\cdot}5 + 3}{3}\ 11{\cdot}5 \text{ mm.} = 32{\cdot}6 \text{ mm. nearly.}$

The distance glasses should be normally centred, *i.e.*, their optical centres should be at their geometrical centres; then to these should be cemented reading segments of + 3D, of the size given 15 × 7 mm., and such that the optical centre of the right reading segment is situated 23 mm. below, and 5·2 mm. to the inner side of the centre of the distance glass, while the optical centre of the left reading segment, should be 32·6 mm. below, and 7·4 mm. to the inner side of the centre of the left distance glass. The result of this arrangement will be that the optical centres of the reading combinations are situated symmetrically 11·5 mm. below, and 2·6 mm. to the inner side of the centres of the spectacles. Consequently, when the eyes are depressed 23° and converge to a point 1/3 m. distant, they will be able to obtain single binocular vision of that point with comfort, and will also have a much greater field for distance than with the ordinary bifocals.*

*There is another point which also needs consideration, although it hardly comes under the title of this paper. On viewing an object 23° below the horizontal plane, through spectacles the plane of which is vertical, the cylindrical effect of the glasses on this oblique vision must be taken into account. Thus the right reading combination of + 6 D acts as if it were + 6·32 D sph. ⊃ + 1·14 D cyl. axis horizontal,



and the left reading combination of + 8·5 D acts as if it were + 8·95 D sph. ⌒ + 1·61 D cyl. axis horizontal.

This astigmatic effect must be obviated, either by the patient inclining his spectacles 23° downwards when reading, so that his visual lines are at right angles to the plane of the glasses, or by altering the prescription of the reading segments. In the case above this could be done by making the right reading segment a toric lens of + 1·83 D sph. ⌒ + ·87 cyl. axis vertical instead of + 3 D, and the left reading segment + 1·34 D sph. ⌒ + 1·23 D cyl. axis vertical. This will necessitate altering, according to the formula given above, the position of the optical centres ; it will be found that the optical centre of the right reading segment should be 30·4 mm. below and 5·5 mm. to the inner side of the centre of the distance glass, while the optical centre of the left reading segment should be 58·7 mm. below and 8·2 mm. to the inner side of the centre of the distance glass. It is unnecessary to point out how troublesome such glasses would be to make.

For those who are interested in the scientific side of the subject, I append a simple geometrical solution of the problem of the action of a lens decentred upwards on the fixation lines of the eyes. It will be noted that the expression is somewhat similar to that which gives the effect (χ) of a laterally decentred lens on convergence,

viz., $\tan \chi = \dfrac{pl + f''m}{pf'' + k(p + f'')}$

where l, represents the decentration, and m, represents half the interocular distance.

Let O H represent the plane of the lens (considered concave for simplicity) with its second principal focus at F″, and its optical centre at O in line with the centre of motility C of the eye. Let P be the object situated at $\frac{1}{3}$ m. from the coronal plane through the centres of motility of the eyes, and let its angle of depression be F″ C P or α. The image of P will be formed at Q, so that the angle of depression of the eye will be F″ C Q or θ. Now, let P H=p, Q N=q, F″O=f″, O C=k the constant distance between the lens and the centre of motility of the eye which may be taken to be 27 mm.

$$\text{Now, } \tan \theta = \tan \text{O C L} = \tan \text{M Q C} = \frac{\text{M C}}{\text{Q M}}$$

$$\text{and } \tan \alpha = \tan \text{F''C P} = \tan \text{K P C} = \frac{\text{K C}}{\text{P K}}$$

$$\text{but } \frac{\text{M C}}{\text{K C}} = \frac{\text{N O}}{\text{H O}} = \frac{q}{p}$$

$$\therefore \frac{\tan \theta}{\tan \alpha} = \frac{q}{p}\cdot\frac{\text{P K}}{\text{Q M}} = \frac{q}{p}\cdot\frac{p+k}{q+k} = \frac{f''}{f''+p}\cdot\frac{p+k}{\dfrac{pf''}{f''+p}+k}$$

$$\therefore \tan \theta = \frac{f''(p+k)}{pf''+k(f''+p)}\tan \alpha = \frac{p+k}{p+k+\dfrac{pk}{f''}}\tan \alpha$$

Now, in the case considered, the lens being convex, f″ is negative, and, therefore, $\theta > \alpha$.

We may take p+k = 333 mm., and k = 27 mm., the average distance of the lens from the centre of motility of the eye.

$$\text{Then } \frac{pk}{f''} \text{ or } -\frac{306 \times 27\text{D}}{1000} = -8{\cdot}26\text{D}.$$

For the right eye where D = + 3

$$\tan \theta = \frac{333}{333-24{\cdot}78}\tan 20^\circ = \tan 21^\circ 28'$$

For the left eye where D = + 5·5

$$\tan\theta = \frac{333}{333-45\cdot43}\tan 20^\circ = \tan 22^\circ\ 51'.$$

If the left glass be depressed l mm., *i.e.*, if O occupy a position in the diagram l mm. to the left, on making the necessary changes in position of Q and F,″ and maintaining the positions of P, H, K, and C, it will be easily seen that as before

$$\tan\alpha = \frac{KC}{PK} \text{ or } \frac{KC}{p+k} \text{ and } \tan\theta = \frac{MC}{QM} \text{ or } \frac{MC}{q+k}$$

Now, however, MC no longer is equal to $\frac{q}{p}$ KC, but

$$\text{to } \frac{q}{p}(KC-l) + l, \text{ or to } \frac{q}{p}KC + \frac{lq}{f''}$$

$$\therefore (q+k)\tan\theta = \frac{q}{p}KC + \frac{q}{f''}l.$$

$$\therefore \tan\theta = \frac{q}{p}\cdot\frac{p+k}{q+k}\tan\alpha + \frac{q}{f''(q+k)}l.$$

$$\text{or } \tan\theta = \frac{p+k}{p+k+\frac{pk}{f''}}\tan\alpha + \frac{lp}{pf''+k(f''+p)}$$

Hence, if l = 5·5 mm., $\tan\theta = 21^\circ\ 28'$, consequently if the left glass be lowered 5·5 mm., single binocular vision will be attained on depressing both fixation lines 21° 28′.

SOME NEW FORMS OF BIFOCAL LENSES.

BY

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The last two years have witnessed the production of some new types of bifocal lenses, which in many ways are an improvement upon the older forms.

The qualities that make for excellence in a bifocal lens are lightness, invisibility of the dividing line, and endurance in wear: the shape of the lower lens should be suitable to the requirements of near and distant sight, and its centre should be capable of correct adjustment.

The "uni-bifocal," or solid down-curve bifocal lens (fig. 1) has all these qualities except the second. It approximates in appearance to the older type of bifocal, where the lower lens was obtained by cementing a thin convex wafer on to the larger one. In the solid bifocal the lower lens is worked into the other

(fig. 2). This reduces the weight and renders the lens less liable to accident. By a suitable adjustment of the tool in the process of working, the centre of the lower lens can be controlled, and its shape is fixed by regulating the size of the circle which defines it. However, it cannot be claimed of the dividing line that it is invisible; it consists of a considerable ridge, which is deeper and more conspicuous the greater the difference between the upper and lower lenses.

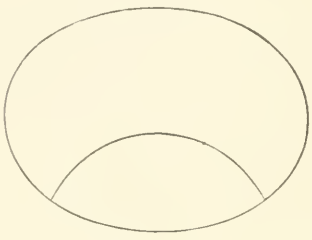

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

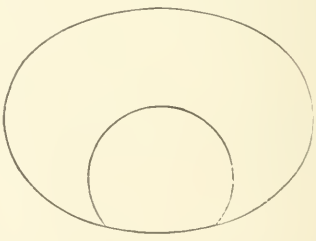

Fig. 5.

In a later form of these lenses, the so-called "luxe" bifocal, this drawback has been partly met: the upper portion of the lens is worked down until the margins of the two surfaces coincide, as shown by the dotted line in fig. 3. This process abolishes the ridge, and the result is a bifocal lens which approaches, if it does not attain, absolute perfection.

Another ingenious form of bifocal is the inlaid or "Kryptok," made by Borsch, of Philadelphia. Two glasses are selected whose respective indices differ as much as may be; these are

worked to corresponding convex and concave curves, and the former is let into the other, as shown in the diagram (fig. 4). This inlaid lens may be fixed with cement, and the desired surfaces are then worked into the combined lens, as is indicated by the dotted line. The finished lens (fig. 5) has a good appearance, the dividing line is nearly invisible, and there is no ridge or declivity of any description, the additional positive power being obtained by the greater density of the inlaid glass, and the surface of the lens being of the same curve over its whole area. The composite surface of this lens is sometimes covered by a thin envelope of glass, but in the best form of the "Kryptok" the inlaid piece is welded on by fusion. By this process the lens becomes in effect one solid piece of glass, and the line of division between the two lenses is absolutely invisible; the lower lens is only perceptible by its different effect on transmitted light—a great advantage to the wearer both from a subjective and objective point of view.

Care is required in fitting and in wearing bifocal lenses; the height of the dividing line relative to the pupil should be exactly adjusted, and the wearer must learn to avoid the position in which the line crosses the pupil. A more important consideration is the fault of obliquity: if the lenses are correctly fitted for distant sight, a considerable fault is caused by oblique direction of the sight when the lower lens is used for reading. This is obviated by angling the front of the spectacles. With convex lenses the angle should be as much as ten or fifteen degrees; even concave lenses should be angled as much as the stronger upper lenses will allow. Another way of achieving the same effect is to work the lenses in periscopic or deep meniscus form; this is easily done with spherical lenses, and with sphero-cylinders the outer surface may be worked to a toric curve. Theoretically, this is a better correction than is obtained by angling the frame, as the fault of obliquity is corrected, not only in the vertical, but in the horizontal and intermediate directions as well.

These improved bifocal lenses can only be ordered for persons of means: they are expensive, varying in price from fifteen to fifty shillings the pair. There is, moreover, in those last described the additional drawback that they are at present only manufactured in America, which fact entails a delay of five or six weeks in procuring them; however, there is a prospect of their shortly being made in England, in which case it is anticipated that they will be available to the public at a much more reasonable price. They can be obtained at any of the leading opticians.

CLINICAL MEMORANDUM.

ASSOCIATED MOVEMENTS OF UPPER EYELID AND JAW.*

BY
SYDNEY STEPHENSON.
LONDON, ENGLAND.

A fair number of cases have now been reported of synkinesis between the jaw and an upper lid affected with ptosis. The peculiarity of the following case was that the abnormal association involved not the lid with ptosis, but the unaffected eyelid. The facts are as follows:

Charles G , 9 years, brought to the Evelina Hospital on September 10th, 1907, on account of an attack of acute infective conjunctivitis, due to the Koch-Weeks' bacillus. According to the mother's statement, the child, when nine months old and still in arms, was dropped on a step, with the consequence that his skull was dented in. His left eye has always been "smaller" than his right one, and since the accident mentioned his right upper lid has twitched when the child eats.

Present State.—Slight ptosis on left side. When the lad eats or chews, the right upper lid jerks rhythmically up and down, the left upper lid showing no such associated movements. The same thing occurs when the mouth is opened or shut, or when the lower jaw is moved from side to side. No movements of the lid occur when the eyes are turned in various directions. Neither is there any pupillary anomaly. The patient has a peculiar physiognomy, and his skull exhibits a transverse depression behind the frontal bone.

Remarks.—My case falls into line with those of Fuchs, Fraenkel, and Eales, where, although there was no ptosis, a synkinetic association existed between one upper eyelid and the lower jaw. An abstract of these particular cases, together with a discussion of abnormal associated movements of the eyelids in general, will be found in an able communication by Walter W. Sinclair, of Ipswich, in the *Ophthalmic Review* for 1895, p. 307.

These "jaw-winking" movements, as they have been called, have been accounted for in several ways. The currently received explanation assumes that the levator palpebrarum, ordinarily supplied by the III-nerve nucleus, receives in these cases an additional supply from the V-nerve nucleus, which also innervates the muscles of mastication. This was the explanation put forward by a committee of the Ophthalmological Society appointed to examine into the first case of the kind reported in England, namely, one exhibited by R. Marcus Gunn in 1883 (*Transactions of the Ophthalmological Society*, Vol. III, 1883, p. 286). N. B. Harman, however, adopts another view (*Ibidem*, Vol. XXIII, 1903, p. 369). He regards the "jaw-winking" movement as an atavistic anomaly, in which there is an association of the jaw muscles with the migrated spiracle muscles.

* Patient shown on October 19th, 1907, before the Society for the Study of Disease in Children.

TRANSLATION.

INJURIES TO THE EYES OF THE CHILD DURING LABOUR.*

(Continued.)

BY

DR. BRUNO WOLFF, of Berlin, Germany.

(*Translated by* ROSA FORD, M.B.Lond.)

AUTHOR.	REFERENCE.	CONDITION OF CHILD.	DETAILS OF LABOUR.
Lomer	*Loc. cit.*	Comminuted fracture of the os frontis through the supra-orbital arch.	Forceps.
Lomer	*Loc. cit.*	Comminuted fracture of the roof of the L. orbit.	Primip. Ant. parietal bone presenting. Forceps. Normal pelvis.
Lomer	*Loc. cit.*	Comminuted fracture of the L. orbital roof.	Primip. 1st vertex position. Forceps. Normal pelvis.
Lomer	*Loc. cit.*	Comminuted fracture of the R. orbital roof.	Primip. Ant. parietal bone presenting. Forceps.
Nettleship	"A case in which paralysis of the right sixth and seventh nerves was present at birth, in a child delivered by forceps; recovery." *Trans. Ophthal. Soc.*, XXIII.	No swelling of the eyelids. R. eyelid stands open, R. eye markedly turned inwards. Paralysis of the R. facial. Retinal hæmorrhages. The aetiology is taken to be a compression of the nerve at the base of the skull through a hæmorrhage.	Somewhat narrowed pelvis. Brow presentation. Forceps. One blade lay behind the R. ear, the other partly on, partly in front of, the L. ear.
Nettleship	*Ibid.*	(5 years). Paralysis of the abducens and facialis. Forceps marks in front of the ear on the paralysed side. After the birth, the eyelids were markedly swollen.	Primip. Face presentation. Forceps. Nettleship's view is that the facial was doubtless directly pressed on by the forceps, and that the abducens was damaged in the orbit by hæmorrhage into the orbital tissue.

* *Beiträge zur Augenheilkunde*: Festschrift Julius Hirschberg, Leipzig, 1905.

Author.	Reference.	Condition of Child.	Details of Labour.
	(*c*) Forceps to	the head in the pelvis.	
Hofmann	*Loc. cit.*	During the birth of the head, in the endeavour to cut through the umbilical cord, which was tightly wound round the neck, an eyeball suddenly slipped into the free space between the fingers of the obstetrician. There was some bleeding afterwards from the orbit. Eyelids quite normal. The other eye protruded somewhat more than is usual with newborn children. Above the R. eye, at the frontal boss, a distinct bony depression. The child died on the 1st day. Autopsy: blood extravasation in the cranial cavity. The R. frontal bone depressed at the frontal boss. Fracture of the orbital part of the frontal bone, right and left.	Compare with the other case born of the same mother (also reported by Hofmann, above, under the spontaneous labours). Multip. 3. 1st vertex position. The forceps were put on the head in the pelvis. The application was very easy. By two moderate tractions the head was brought into the pelvic outlet (?Beckeneingang) and then the forceps removed. The forceps had "lain so well on both sides of the head that they could hardly have had a more blameless position." Patient had taken during the labour two powders, consisting each of ½ scruple of ergot.
Zangarol	*Thèse. de Paris*, 1864. Quoted from Servel (Case XXII.)	Fracture of the orbital roof. Enucleation of the eye "qu'on avait trouvé dans les linges."	Narrow pelvis. Head had passed partly into the pelvic cavity.
Sidler-Huguenin	*Loc. cit.*	Opacity of both corneæ. Hæmorrhages into the conj. bulbi.	Primip. Normal pelvis. Forceps on the head in the pelvic cavity. According to the accoucheur, the forceps could not have directly pressed on the eye.

Author.	Reference,	Condition of Child.	Details of Labour.
Cramer	"Geburtsh. Verletzung d. Kindl. Auges." *Centralbl. f. Gynäk.*, 1899	Immediately after birth bleeding from the L. eye. Crepitation over the L. supra-orbital arch and at the L. frontal boss. On separating the lids the cornea appeared indented. About over the middle of this, runs down to the sclera, a tear from above in, below out. Pressure scar left side over the upper part of the pinna, over the temple forward up to the ext. angle of the eye, and from there over the side of the orbit and the forehead upward and backwards. Pressure scar R. less distinct. Phthisis bulbi developed without inflammatory complications.	One-sided ankylosis of pelvis which was narrowed transversely. On application of the forceps the head was in brow presentation, rather low in the small pelvis. Large fontanelle in front, somewhat to the left, behind the pelvis, small fontanelle behind. Sagittal suture almost in the antero-posterior diameter. Extraction in brow presentation. Forceps lay on closure of the blades well on both sides of the head. Some force was required for extraction. The orbits must have been compressed from side to side.
B. Wolff	Case 3 in text.	Forceps marks on forehead and eye. Paralysis of facial and brachial plexuses.	Generally contracted pelvis. 20 years. Primip. First vertex position. Head about in the pelvic cavity. Forceps.
III.—Cases in which Definite Details About Labour are not to Hand.			
Mme. La Chapellé	Reported by Pajot, "Des lésions du fœtus au cours de l'accouchement." *Thèse d'agrégation* 1853, p. 75. Quoted by Truc.	Exophthalmos. Congestion of the iris.	
Lee	*Ibid.*	Exophthalmos.	
Thinnermann	*Jahresbericht für Charité Annalen*, 1893.	Blood effusion in both anterior chambers.	Child born in a high degree of asphyxia. Efforts to restore for 1¼ hours.

Author.	Reference.	Condition of Child.	Details of Labour.
Praun	*Die Verletzungen des Auges.* Wiesbaden. 1899.	Violet episcleral bleeding with sharp jagged margin at the upper outer quadrant of the R. eyeball to close up to the limbus. The same became gradually smaller, and had completely disappeared after 14 days.	"Directly after the delayed birth."

REMARKS.

We turn now to discuss the subjects brought forward above, which are important from an obstetric point of view.

We may divide the injuries which the eye may undergo during the act of birth into :—

I. Finer changes in the eye, consisting of simple swelling and hyperæmia of the conjunctiva bulbi (Cramer) ; slight changes in the fundus, demonstrable through exact ophthalmoscopic or microscopic examinations ; and others.

II. Coarser changes in the eyes, birth injuries in the narrower sense of the word ; injuries of whose manifold nature the foregoing tables gives a realistic picture.

Between these two groups, no absolutely sharp line can be drawn, but the difference is yet, on the whole, thoroughly characteristic, and such a grouping is absolutely necessary for the discussion of the question, since the "finer changes in the eye" produced by the act of birth, on the one hand, and the "injuries of the eye in the narrower sense of the word," on the other, are quite different. They must therefore be separately considered.

I. In the first place we will glance at the finer changes in the infant's eye produced by the act of birth, and decide—first, the question of their frequency in general, and, then, of their frequency in individual kinds of delivery in particular.

According to the observations of numerous recent writers, which have been mentioned already at the beginning of this paper, no doubt can remain that in the fundi of full-term newly-born children, small retinal hæmorrhages and other finer changes, which have their origin in the act of birth, may be demonstrated with extraordinary frequency. This fact has not at present been accorded in purely obstetrical literature that importance which belongs to it.

From the above observations on this matter, the following are individually mentioned :—

Königstein,[1] among 281 children, found in 29 cases, extravasations in the posterior part of the retina.

Schleich[2] examined the eyes of 150 new-born children. He noted in 49 (32 per cent.) of them fresh scattered extravasations in the posterior part of the retina. In five children (3.3 per cent.) he found an abnormal pallor of the papilla, and a narrowing of the retinal vessels.

Naumoff[3] examined microscopically the eyes of 47 new-born children at full term. Pathological changes were found by him in 12 pairs of eyes (25.5 per cent.). The changes comprised chiefly blood extravasations in the retina.

In some cases Naumoff saw, in addition to hæmorrhages in the retina, œdema and infiltration with a finely granular albuminous substance. In the choroid Naumoff diagnosed hæmorrhages in three cases. These hæmorrhages were never observed, as in Wintersteiner's[4] report (no definite external injury being evident —birth injuries in the narrower sense of the word), in the ciliary body, the iris, in the chambers, or the sclerotic.

v. Hippell[5], Montalcini[6], and Paul[7] have arrived at the same results as Königstein, Schleich, and Naumoff.

Fine changes elsewhere were also noticed very frequently in the eyes of the newly-born.

Extraordinarily often, after Scrini's[8] observations, strabismus was noticed. Scrini diagnosed this condition in 60 out of 136 newly-born in Baudelocque's clinic, and believes that the phenomenon has a connection with events at labour.

It is worth noting further, that, as Cramer[9] says, the blood vessels of the conjunctiva bulbi are always markedly injected after birth and that the mucous membrane is hyperæmic and reddened.

With regard to the occurrence of the lesions mentioned in different kinds of labour, small retinal hæmorrhages may occur, as Naumoff's examinations have shown, after spontaneous deliveries, as well as after instrumental or breech deliveries. As to whether the children who are born head last show retinal changes more frequently than those in whom the head is born first,

1. Königstein, *loc. cit.*
2. Schleich, *loc. cit.*
3. Naumoff, *loc. cit.*
4. Wintersteiner, *loc. cit.*
5. v. Hippel, *loc. cit.*
6. Montalcini, *loc. cit.*
7. Paul, *loc. cit.*
8. Scrini, "Strabisme des nouveau-nés." *Gaz. des Hôpitaux*, 1901, p. 492.
9. Cramer, *loc. cit.* *Arch. f. Gynäk.*, Bd. LIX., 1899.

cannot yet be decided.[1] Naumoff concludes that the children of mothers with narrow pelves, and the children of primiparæ, more frequently show blood extravasations in the fundus, than children of mothers with normal pelves, or children of multiparæ. "The origin of the changes in the eyes of new-born children stands," as Naumoff considers, "in connection with the long duration of the act of birth, whatever the cause of that may be."

With regard to the hyperæmia and swelling of the conjunctiva, these changes in the eye, which also occur in a minor degree in normal confinements, are, according to Cramer's[2] observations, much more marked in a face or brow presentation or in delivery by forceps. Cramer found a violent reaction of the eyes to silver nitrate drops after such deliveries, so that he holds the Credé method to be contraindicated here, and he considers the increased sensitiveness of the conjunctiva to be due to the fact that in these deliveries the mucous membrane is markedly injured during the act of birth.

Of great interest is the question, through what forces in the course of delivery the above-mentioned changes are produced.

So far as these affections of the conjunctiva are alone concerned, it is quite legitimate, without going further, to conceive the cause to be chiefly the direct mechanical pressure which the parts experience in the narrow birth passages.

Much more difficult to explain are the hæmorrhages observed in the choroid and especially in the retina.

Königstein[3] thought that the cause of this condition in general did not lie in the act of birth, but is to be rather sought in the circulatory changes and arterialisation of the blood "taking place at the first breath drawn by the infant."

Schleich[4] considers that the great pressure, acting on the head of the child during its passage through the parturient canal, and lasting so long a time, may cause, even in normal labours and common presentations, a hindered circulation in the vascular area of the head, and a high degree of congestion, as the result of which hæmorrhages occur from the delicate vessels of the retina.

Against this view, Naumoff[5] has pointed out that the explanation of the retinal hæmorrhages cannot rest exclusively in such a general vascular engorgement in the head of the child; since, if this general vascular engorgement were the only cause, then, as

[1] It would be very useful in the elucidation of the cause of these hæmorrhages, if in further studies, attention were specially directed to the settlement of this question. See below the differences which exist between the children born with fore and after-coming heads, with regard to "eye injuries in the narrower sense of the word."

[2] Cramer. *Loc. cit. Arch. f. Gynäk.*, Bd. *LIX.*

[3] Königstein. *Loc. cit.*

[4] Schleich. *Loc. cit.*

[5] Naumoff. *Loc. cit.*

Naumoff considers, the hæmorrhages should be found as often in the choroid and the conjunctiva as in the retina. Since however, they occur, as a matter of fact, by far most frequently in the retina, there must be a special cause for the retinal hæmorrhages.

Naumoff believes, then, that the frequency of retinal hæmorrhages may be thus explained, that, besides the general vascular engorgement making itself felt in the whole head, there also comes into play a special engorgement in the retinal veins. This engorgement must be produced in this way, that, as a result of compression, which the skull in its passage through the narrow parturient canal experiences, a rise of intracranial pressure takes place, and, consequently, the cerebrospinal fluid is forced into the spaces between the sheaths. In this way a compression of the vena centralis, and a vascular engorgement with all its consequences is produced, especially in the papilla and retina.

But this theory, too, has not remained without opposition : v. Hippel[1] has raised against it the objection, that if Naumoff's explanation were correct, one ought to find, in the cases where hæmorrhages are present, wide spaces between the sheaths. This is, however, in reality by no means always the case.

In opposition to Naumoff, Thomson and Buchanan [2] have drawn attention to the facts, that retinal hæmorrhages also appear in premature births, where there has been no question at all of an unusual external pressure on the head ; and that, on the other hand, retinal hæmorrhages may be absent from cases, in which the eyes have evidently experienced great pressure, and in which, elsewhere, changes caused by the pressure are actually in evidence. Thomson and Buchanan themselves believe that the hæmorrhages in question are lesions resulting from a rise of blood-pressure, produced by disturbances in the placental circulation.

My own view is that, in accordance with the objections quoted above from v. Hippel and Thomson and Buchanan, it cannot at present be considered at all proved, that a rise of intracranial pressure during birth, such as Naumoff mentions, has an essential significance in the etiology of small retinal hæmorrhages.

The general stagnation of blood in the child's head, which may undoubtedly be produced through the high degree of pressure to which the head is exposed in the narrow birth passage, is a different matter. That this general blood stagnation plays a part in the causation of those hæmorrhages, I hold to be, at all

[1] v. Hippel. *Loc. cit.*
[2] Thomson and Buchanan. *Loc. cit.*

events, very probable. I believe, however, with Thomson and Buchanan, that beside the external pressure, other forces must also be taken into account.

In this respect I would draw attention to the following: venous hyperæmia in the most various organs and ecchymoses, are familiar typical *post-mortem* findings after death from asphyxia. In children born dead from asphyxia, such ecchymoses are almost constantly to be demonstrated; they are present, not only in their places of predilection [under the pleura pulmonalis and costalis, and under the pericardium (so-called Bayard's ecchymoses[1])], but also in many other places, such as, according to v. Hofmann[2], in the thymus gland, the mucous membrane of the respiratory organs, the epiglottis, and so on; according to B. S. Schultze[3], especially under the liver-peritoneum, and in the parenchyma of the liver. Runge[4] observed in children still-born from asphyxia "ecchymoses scattered over almost all the organs." As far as the retina specially is concerned, v. Hofmann[2] mentions that Legroux and Tammasia saw ecchymoses in the retina of suffocated animals, and that, according to Nobiling, ecchymoses are frequently present in the retinæ of asphyxiated new-born children.

Consequently, I would suggest that a greater or less number of the small blood extravasations in the eyes of new-born are to be placed in the same class etiologically as the ecchymoses produced by asphyxia in other organs.

To consider further the general question as to how ecchymoses are produced by asphyxia would lead us too far. The following may, however, be briefly mentioned: as one cause of the condition among others, the aspiration is advanced, which the blood experiences in the thoracic cavity, when, with a powerful inspiratory effort, no air streams into the lung alveoli, and the lungs cannot follow the usual pull of the walls of the thorax on them (*cf*, Olshausen[5]).

The chief part, however, in the causation of these ecchymoses, is played, according to v. Hofmann,[2] by the vaso-motor spasm occurring at the height of the suffocation, and the marked increase of side-pressure, which the vessel walls therefore have to bear.

My supposition, that the asphyxia of infants is of an essential significance in the production of small blood extravasations in the eyes, stands in agreement with the fact, that the retinal lesions above mentioned, are present most often after protracted and difficult labours, *i.e.*, chiefly after such, in which the

[1] *Cf.* Olshausen, in Olshausen-Veits *Lehrb. d. Geburtsh.* 1902. S.707.

[2] v. Hofmann, *Lehrbuch d. gerichtl. Medizin.* 9, Aufl. Bearb. v. Kolisko. 1902. S.522ff.

[3] B. S. Schultze, "Zur Wiederbelebung tief scheintot geborener Kinder durch Schwingungen." *Centralbl. f. Gynäk.*, 1893., Nr.15.

[4] Runge, "Anatom. Befunde b. Neugeborenen." *Charité. Ann.* VII. *Jahrg.* 1882.

[5] Olshausen, *loc. cit.*

occurrence of a more or less high degree of asphyxia of the child is nothing unusual. It must be also added that, the highly important observations of Naumoff on this question, were made exclusively on the eyes of children, who "either during the birth-act, or shortly after the same, died!" In the same way a case of this kind, examined by Wintersteiner,[1] was that of a child, who had come into the world asphyxiated.

II. We pass on now to discuss the coarser changes of the eyes occurring as a consequence of the birth-act, birth-injuries in the narrower sense of the word. Only with these cases, as before mentioned, is the foregoing tabular review concerned.

Praun[2] has divided these injuries into I. Fissures of the skull-bones, in particular of the orbital roof; II. Injuries of the soft parts bordering the orbit, including the lids; III. Protrusion and Avulsion of the eye-ball; IV. Eye muscle paralyses; V. Injuries of the eye-ball.

A search through a large number of obstetric statistics, brings one to the conclusion, that this kind of eye injury is an extremely rare occurrence.

The "Charité-Annals" contain the reports of 39,317 confinements, which came under observation in the years 1874-1902, in the obstetric department of the Charity. In the notes about the children of these 39,317 deliveries, I found only 6 cases of eye injury mentioned. From the above-given material of 581 births collected by me from the obstetric out-patient department of the Charity, only the 4 cases of eye injury to the new-born, fully recorded above, were noted.[3] It must, however, be noted that these 581 observations concerned exclusively labours with narrow pelves, *i.e.*, only pathological confinements, and cases in the great majority completed by operative interference.[4]

As for ophthalmological statistics, Truc[5] affirms that obstetric injuries of the eye and its surroundings appear to be extraordinarily rare; since de Wecker has seen only 3 cases among 400,000 patients, and he himself likewise only 3 cases out of more than 40,000 patients.

As opposed to this, I have been able to collect in the foregoing table, 112 cases of eye injuries from the literature[6], a number which must therefore be considered surprisingly large, all the more as the cases published come preponderatingly from ophthalmologists, and only in small measure from obstetricians.

[1] Wintersteiner. *Loc. cit.*
[2] Praun. *Loc. cit.*
[3] Injuries caused by craniotomy are disregarded here as in the table.
[4] *Cf.* Bruno Wolff. *Loc. cit.*
[5] Truc. *Loc. cit.*
[6] Including the new cases reported in the present communication.

I raise this point here, because numerous cases of eye injury in the new-born—especially those which occur in still-born children—do not come under the observation of the ophthalmologist at all.

Thus it occurs that individual obstetricians, who have devoted special attention to the injuries of the infantile skull in difficult labours, *e.g.*, Nagel[1], noted also injuries of the eye in a by no means small number of cases among their special material.

I believe, therefore, that the eye injuries of the new-born are certainly much more frequent than most statistics, and the scanty details in the text-books, would make it appear. Probably Bloch[2] is entirely right in his supposition, that the eye injuries when the eye after birth shews no striking appearances, *e.g.*, subconjunctival hæmorrhage, suppuration, and so on, are easily overlooked.

As to the various injuries and the conditions resulting therefrom, I found, using the above-mentioned classification[3] given by Praun, among the 112 cases in my table :—

I. Fissures of the orbital walls in 19 cases (orbital abscess in 2 cases).

II. Injuries of the soft parts bounding the orbit, including the lids, in 41 cases.

(To be concluded).

CURRENT LITERATURE.

NOTE.—Communications of which the titles only are given either contain nothing new or else do not lend themselves to abstract.

I.—BACTERIOLOGY.

(1) **Randolph, Robert L.—Bacteriological examination of the conjunctival sac in typhoid fever and in pneumonia.** *Bulletin Johns Hopkins Hospital*, October, 1906.

(2) **Casali, A.—Metastatic ophthalmia due to the bacillus hæmophilus of Pfeiffer.** *Annali di Ottalmologia*, Vol. XXXVI (1907), fasc. 1 to 2, pages 116-127.

(3) **Bertozzi, A. (Sienna).—A case of metastatic ophthalmia due to the fusiform bacillus of Vincent, occurring in the course of measles.** *Annali di Ottalmologia*, Vol. XXXVI (1907), Fasc. 192, pages 138 to 145.

[1] Nagel, see the details in the foregoing table.
[2] Bloch. *Loc. cit.*
[3] See above page 26.

(4) Bietti.—Panophthalmitis and hypopyon keratitis from bacillus subtilis. (Panoftalmite e cheratoipopion da bacillo sottile. Ricerche (cliniche e sperimentali.) *La Clinica Oculistica*, Gennaio, 1907.

(5) Vigier.—Panophthalmitis following penetration of a piece of whiplash into the vitreous (Panophthalmie après pénétration d'une mèche de fouet dans le corps vitré.) *Ann. d'oculistique*, T. CXXXVII, p. 126, février, 1907.

(5A) Zade, Martin.—Contribution to the knowledge of keratomycosis aspergillina. (Beitrage zur Kenntnis der Keratomycosis Aspergillina.) von Graefe's *Archiv f. Ophthalmologie*, Bd. 65, iii, 14 Mai, 1907.

(6) Greeff, Frosch, and Clausen.—Researches into the etiology and development of trachoma. (Untersuchungen ueber die Entitelung und Entwickelung des Trachoms,) *Arch. f. Augenheilk.*, Juli, 1907, p. 52. Illustrated. Parts I and II.

(7) Makai, Endre. — Bacteriological examination of 100 cases of acute conjunctivitis. (Bacteriologische Befunde bei acuten Bindehauterkrankungen an der Hand von 100 Fällen.) *Arch. f. Augenheilk.*, September, 1907, p. 131.

(8) Castelain, D.—A peculiar infection of the free border of the eyelid (Meibomian streptothricosis). [Infection particulière du bord libre palpébral (Streptothricose Meibomienne).] *Annales d'oculistique*, octobre, 1907.

(9) McKee, Hanford.—A new pathogenic micro-organism of the conjunctival sac. *Ophthalmic Record*, October, 1907.

(1) As a result of this interesting study, **Randolph** arrives at the following conclusions: "The bacterial flora of the conjunctival sac during typhoid fever and pneumonia shows practically no difference from the conjunctival flora of individuals who are in perfect health. It does not seem unreasonable to suggest that the exposed mucous surfaces throughout the body are inhabited by bacteria which perform for their resting place functions of a protective character by making the surroundings uncongenial to bacteria of other kinds." C. A. O.

(2) In a little girl of seven years suffering from a severe attack of influenza, the left eye showed a subacute panophthalmitis at the end of a week. **Casali** found on microbiological

examination of liquid drawn, by means of a Pravaz syringe, from the vitreous chamber the bacillus hæmophilus of Pfeiffer. This is a rare finding, for more frequently the metastatic eye complications of influenza are due to secondary affections (staphylococci, streptococci, diplococcus) or even to microbic symbioses.

A. ANTONELLI.

(3) The title of **Bertozzi's** work is a sufficient *résumé* and indicates its interest.

(4) **Bietti** refers to the researches of Silberschmidt, in which it was first shown that the bacillus subtilis is an important agent in the production of panophthalmitis. He reminds us that Silberschmidt showed that in many instances the bacillus having produced the panophthalmitis disappeared, and, on examination, only other saprophytic bacteria were found. In Bietti's cases, the bacillus subtilis was found and grown in characteristic cultures. The first case was a small child in whom, 14 days after the receipt of a wound, panophthalmitis developed. In the second case, a hypopyon ulcer gave an almost pure cultivation of the same bacillus. He draws attention to the fact that if Silbeschmidt's conclusions were universally correct, the bacillus subtilis ought to have disappeared from the wound before the panophthalmitis came on. HAROLD GRIMSDALE.

(5) **Vigier's** patient received a blow from a whip on his eye which caused a penetrating wound followed by panophthalmitis. The eye was excised on the sixth day after the accident, and during the removal a piece of whipcord, 4 centimetres long, escaped from it through the wound. Examination of the eyeball showed that the lash had made a wound in the upper part of the sclerotic, passed by the iridic angle tearing the ciliary body from its insertion and penetrated into the centre of the vitreous. A bacteriological examination of the whipcord, made some time later, showed it to contain a large number of bacteria, all of them saprophytes; but it is probable that some more virulent organisms had perished in the interval.

R. J. COULTER.

(5A) **Zade** had the opportunity to examine an eye affected with this rare disease. The characteristic of the ulcer, which was due to infection with aspergillus fumigatus, was a very sharp line of demarcation, the ground being covered with dry, crumb-like masses, and a well-defined immigration zone. The microscopical examination of such a condition can alone make the diagnosis certain. In Zade's case the mycelia displayed conidia with organs of fertilization, the presence of which in the human eye has sometimes been denied. It proved pathogenic for the rabbit's cornea. The course of the disease was, as usual, severe and protracted, although not destructive, but a few favourable cases

have also been recorded. The treatment is the usual one for ulcers. In the present case Saemisch's section was resorted to.

R. GRUBER.

(6) **Greeff, Frosch,** and **Clausen** have been working together in an endeavour to elucidate the ætiology of trachoma. In the conjunctival secretion they have found small cocci, generally arranged in pairs, and just visible with an oil immersion objective and eyepiece No. 8. The organisms stain with dilute carbol fuchsin, aqueous and alcoholic solutions of methylene blue, and with Bismarck brown. They do not stain with Gram. No cultures were obtained. The same cocci were also found in trachoma follicles, and the authors further believe them to be identical with the small granules described by Halberstädter and Prowazek. These granules were observed in epithelial cells. They also stained with carbol fuchsin and methylene blue but not with Gram. PERCIVAL J. HAY.

(7) **Makai** found organisms present in 88 out of 100 cases of acute conjunctivitis. Of these 88 cases, 25 (28·4 per cent.) were caused by the Morax-Axenfeld diplobacillus, 41 (46·6 per cent.) by staphylococci, 31 (35·2 per cent.) by pseudo-diphtheritic bacilli, 6 (6·8 per cent.) by the bacillus subtilis, 4 (4·5 per cent.) by streptococci, and 4 by the bacillus mesentericus. The Koch-Weeks' bacillus and the pneumococcus were absent.

PERCIVAL J HAY.

(8) **Castelain** describes a curious condition (at first believed to be actinomycosis) of the free border of the lower eyelid observed in a spinner, 57 years of age. The ailment, which was of long-standing, was characterised by small nodular growths from which tiny yellowish masses could be squeezed. The bacteriological examination, undertaken by Vansteenberghe, of the Pasteur Institute at Lille, showed an abundance of Gram-positive slightly curved rods or Y-shaped filaments, which formed a grumous scum when grown on the surface of bouillon deprived of air. Cultures were also obtained on glycerine-potato, as well as on glycerine-serum. The microbe scarcely grew on carrot, non-glycerised potato, infusion of hay, ordinary bouillon, gelatine, or agar. Its vitality was feeble, so that inoculations of cultures into the anterior chamber, the peritoneal cavity, or under the skin of rabbits gave negative results. The organism was believed to belong to the streptothrix variety represented by Axenfeld in his article on Ocular Bacteriology in Koller and Wassemann's *Treatise* (p. 560, case No. 3). The patient was submitted for examination to Morax, who found the pneumobacillus, in addition to the organism described above.

SYDNEY STEPHENSON.

(9) An excellent article in which **McKee** describes a

micro-organism that he has found in the discharge from nine cases of mild inflammation of the conjunctiva. Its characters and differentiæ were as follows:—short, thick bacilli, not staining by Gram, and lying, in smear preparations, grouped or singly. It stains well with weak carbol-fuchsin or methylene blue. It is aërobic, and grows only at the temperature of the body and best upon hæmoglobin-agar of 1·0 and 1·75 acid reaction. It fails to develop on blood-serum or bouillon. When obtained from cultures, the organism is short and thick, with pointed ends, and has a length of from 0·5μ to 2·0μ and a width of from 0·3μ to 0·4μ. It stains uniformly, has no capsule, is non-motile, and does not form spores. Cultures on hæmoglobin-agar, which appear within twenty-four hours as tiny, discrete, rounded colourless colonies, retain their vitality for from two to three weeks. The bacillus (provisionally christened by the author the "B. McKee") is pathogenic for the human conjunctival sac. Eighteen hours after inoculation of the last-named, the eye assumed the clinical picture of a marked catarrhal conjunctivitis. A house mouse died twenty-four hours after its peritoneal cavity had been inoculated with a culture of the organism. Finally, it was noted that on hæmoglobin-agar the McKee bacillus grew readily in relationship with the staphylococcus. As regards the differentiation between the McKee bacillus and those of influenza and acute infective conjunctivitis (Koch-Weeks'), the author points out that the several organisms show considerable differences in their growth upon artificial media. Thus, the Koch-Weeks' bacillus does not grow well on hæmoglobin-agar, while the B. influenzæ on that medium produces profuse, raised, white colonies, of circular outline. On the other hand, the bacillus McKee gives a characteristic growth on hæmoglobin-agar, over the surface of which appears a mass made up of pin-point, colourless colonies. The growth is not readily visible except with a proper reflection of light. The morphological distinction between the organisms named, however, is unsatisfactory. The type of conjunctivitis set up by the new organism differs from that produced by either the B. Koch-Weeks' or the B. influenzæ.

SYDNEY STEPHENSON.

II.—KRÖNLEIN'S OPERATION.

Cross, F. R.—Krönlein's operation. *Transactions Ophthalmological Society* U.K., 1906.

Cross gives a full history of five cases of retro-ocular tumour operated on by Krönlein's method, of one case operated on by

another method, and, lastly, of one case in which only excision of the eyeball and optic nerve was allowed. The Krönlein cases may be summarised thus: (1) Patient aged 64 (Krönlein), tuberculous tumour, size of hen's egg; evisceration of orbit; good healing; no recurrence. (2) Patient aged 37 (Krönlein), fibro-adenoma; evisceration; good healing; no recurrence. (3) Patient aged 32, optic neuritis, V. = $\frac{6}{9}$ and J.1 (Krönlein), mixed-celled sarcoma (?) surrounding outer part of eyeball, extending back along recti muscles and optic nerve. Anterior portion of injured external rectus was stitched to fascia on wall of orbit. In the result, a convergent squint of 15°; V. = $\frac{6}{36}$ and J.16; ptosis. (4) Patient aged 21, optic neuritis, V. = $\frac{6}{12}$ and J.8 (Krönlein), large thin walled cyst (? hydatid) within the muscle cone and pressing on optic nerve. The result was good, since V. = $\frac{6}{9}$ and J.1 with only some degree of restriction of eye movements, especially outwards. (5) Patient aged 29, V. = $\frac{6}{5}$ and J.1; fundus normal (Krönlein), soft friable tumour, osteo-sarcoma, filling orbit and causing absorption of its upper, inner, and lower walls. Only imperfect removal possible. Recovery perfect for the time being, as regards vision and eye movements.

In the above brief synopsis of a very detailed paper, the clinical signs and symptoms and the histories have been omitted, since the main object is to show how the eyeball, and sometimes useful vision, may be saved by performing this operation.

ERNEST THOMSON.

III.—REMOVAL OF IRON SPLINTERS BY THE ELECTRO-MAGNET.

Basso (Genoa.)—On the extraction of iron splinters from the eye by means of the electro-magnet. (Tull' estrazione delle scheggie di ferro dull' interno dell' occhio coll' Elettromagnete.) *La Clinica Oculistica*, Gennaio, 1906.

Basso, after having demonstrated the use and the necessity of extracting iron splinters from the eye, as well as the good results obtained from such an extraction performed aseptically, gives his opinion as to which of the methods should be preferred, *viz.*: which of the electro-magnets should be used, that of Hirschberg (direct method) or that of Haab (indirect method).

He first gives the method of localizing the foreign body by means of the sideroscope of Asmus, modified by Hirschberg (*vide*

Centralblatt f. p. Augenheilkunde, 1899, p. 245). The sideroscope is first applied to the four segments of the cornea to ascertain in which segment the iron splinter is lodged; it is afterwards applied to the centre of the cornea and then to the sclerotic, as far back as possible, to make out how deeply the splinter is embedded in the eye. The oscillations of the instrument bear a greater relation to the distance of the splinter than to its actual weight. Thus, when the needle swings like a pendulum, it means that the foreign body is distant, when, on the contrary, its displacement is sudden and the needle remains displaced, the foreign body is very near.

In Basso's opinion, Hirschberg's method is objectionable because of the necessity of introducing the probe into the existing wound or into one made by the surgeon, and also on account of the low power of the electro-magnet used; Haab's method is likewise so, because of the injuries often caused to the eye by the return passage of the foreign body across the tissues it meets to come back into the anterior chamber, whence it is impossible to extract it, without performing a corneal incision.

To overcome the disadvantages of both these methods, Basso uses an electro-magnet of the Schlösser type (manufactured in Genoa by Varni), charged from the street main, and provided with a switch.

Having placed the patient in the recumbent position, and anæsthetized the eye with cocaine, the magnet is held with both hands against the operator's chest, and the point is brought close to the site of the foreign body, either on the existing wound or on that previously made, while an assistant separates the lids. When the operator is in good position, a second assistant turns on the electric current, and if the operator has not succeeded in extracting the foreign body, or in bringing it into the anterior chamber, after a very short time switches it off, to resume the same process again after the position of the electro-magnet has been altered.

The author then gives the results obtained in 19 cases, in which he employed this *mixed* method, *viz.*: Hirschberg's direct method and Haab's indirect at the same time, by means of an electro-magnet of medium power, after Schlösser's type, observing the most scrupulous asepsis during the operation. In four cases he failed to extract the foreign body, one case was lost through infection, three obtained perception of light only, and the remaining eleven resulted in good vision, namely, higher than $\frac{1}{10}$ of normal vision. CHARLES MANCHÉ.

IV.—ANATOMY AND DEVELOPMENT OF THE EDGE OF THE EYELID.

Contino, A.—On the structure and development of the palpebral margin in man. (Ueber Bau und Entwickelung des Lidrandes beim Menschen.) von Graefe's *Archiv f. Ophthalmologie*, Bd. 66, 3, 17 September, 1907.

This is an important paper dealing in a detailed way with the anatomy and embryology of the palpebral margin in man. It is impossible to enter within the limits of an abstract in any other but the most cursory manner into its contents, some of which are original and at variance with the usual notions. But it seems necessary shortly to summarise **Contino's** description of the anatomy of the cilia, together with their glandular appendages, the muscular and fibrous structures of the lids, and of their nervous supply.

Two types of eyelashes must be distinguished, namely, the youthful and the full-grown. The first is the hollow type, containing an amphora-like cavity at the bulbar end, in which the papilla rests and which extends into a medullary cavity in the shaft of the cilium. The young lash is covered by a fibrous layer derived from the tarsus, which can be differentiated into an external fascicular and an internal circular layer, the latter sometimes not dissimilar to the muscular elements in a vascular sheath, although, of course, of an essentially different character. Within this cover we get the epithelial lining. It shows a different character in its two portions, the first between the opening of Zeiss' glands and the palpebral margin (the out-leading portion) and the second between the glands and the papilla (root or proliferating portion). In its first portion it forms but a modification of the epithelium of the lid margin but the root portion is peculiar. It forms here the so-called external epithelial layer, which stops short at the greatest convexity of the bulb, with exception of the matrix cells only, which are continuous with the cells in the papilla. It rests on a basal membrane, which broadens down to about the middle of the root, and then gradually thins down together with the thinning of the layers of the external epithelium. Besides these coverings, the lash has an independent sheath, called the internal epithelial lining, but only as far as the opening of Zeiss' glands. At this point, immediately before disappearing altogether, it expands somewhat and forms the ampulla. Within the internal epithelial lining three layers can be distinguished, the cell-type within which

somewhat differs; they are termed Henle's layer, Huxley's layer, and the cuticula respectively, but the last-named is hardly distinct. These layers are in direct juxtaposition with the cilia proper, in which three layers—epidermicula, cortical, and medullary substance can be distinguished. Within the amphora we have the papilla containing a group of cellular elements with thick ovoid nuclei and a thin fibrillar stroma, with vessels and nerves. Overlapping the papilla, we find within the amphora a stratum of cells which produce the pigment, and others which form the matrix of the internal epithelial layer and of the epidermicula.

As the lash proceeds on its cycle of natural development, its bulb shrinks, while the rest of the root portion hardly alters in size; the internal epithelial layers become more and more horny; but the most important change is the formation of the "exchange bud" for the production of a new cilium. In appearance this latter resembles a button on a stalk; it is connected with the external epithelial layer and formed of big cubic, embryonic cell elements. Under normal circumstances it lies exactly in the axis of the ciliary root portion, but under pathological conditions it may be dragged into an eccentric position, and thus cause an abnormal direction of the growing lash. As the lash gets older and the proliferation in its amphora slackens and its bulbar portion shrinks, the space between it and the new bud increases, until they finally become separated by the external epithelial layer and an epithelial cylinder, which forms the stem of the new lash.

The sebaceous glands for the eyelashes—two for each—the Zeiss' glands, open with Moll's glands into the ciliary sheath between its upper and middle third. In all essentials they are but hollow excrescences of the epithelial covering. Contino's reconstructions of their shape from microscopical sections are most interesting. They are exquisitely clustered in the new-born, and more developed there than in the adult, as they do not grow at the rate of the eyelash. Often there are adventitious glands, which accounts for the frequency of recurrence of hordeola. The product of Zeiss' glands is not a genuine secretion, but due to the degeneration of the protoplasm.

Extremely interesting are the author's observations as to the nature of Moll's glands. They are of tubular shape, sometimes moderately tortuous, and consist of a duct and of the secretory portion; the latter contains a single layer of cells, hexagonal at the base, but globular at their end and displaying here a thin, clear, collar-like prominence or ridge; the large round nuclei occupy the base and are surrounded by an area of bright granulation, contained in a framework of protoplasm and nucleoli. Under the act of secretion these granuli seem to

increase and to make the cell swell in the axial diameter, while the square diameter shrinks at the same time, so that an hour-glass shape results and spaces between contiguous cells appear. At the same time a pearl of secretion oozes out through the ridge of the central wall. These glands have a well-defined coat of smooth muscular fibres. The Meibomian glands are in structure and function practically identical with the Zeiss glands. They are not provided with muscular elements of their own.

The musculus Riolani, the innermost layer of the orbicularis muscle, consists of three portions. The first and principal one lies between the cilia and the Meibomian glands—subciliary portion ; the second between these glands and the conjunctiva—subtarsal or submeibomian portion ; and the third around and between the eyelashes—interciliary portion ; but all these portions are freely interwoven. They aid, of course, the egress of the glandular secretion by their contraction.

The part of the anatomy which is most frequently misunderstood is the nature of the tarsus, which really forms by itself, the whole stroma of the lid margin. It spreads out on the plane where the roots of the cilia end, and reaches to the anterior edge of the lid margin, forming thus a rectangular triangle with its apex upwards. Its anterior fibres diverge to blend with the subcutaneous tissue, and are freely interwoven with horizontal fibres. In its middle portion it contains the Meibomian glands, and in its posterior portion it touches the conjunctiva, and helps to form the big papillæ of the lid margin with their important nerve-endings, which terminate abruptly at the posterior edge of the intermarginal space.

With regard to the nerve-endings, the nervous supply of the eyelashes appears remarkable. One or two medullated fibres from the border-plexus join the the cilia just at the line of insertion of the Zeiss' glands. They lose their myeline and encircle the hair root. They terminate in a kind of flattened rod with a slight swelling in the middle, which forms a kind of "muff" round the cilia. This complex nerve supply of the last seems to be important from a functional point of view. In the papillæ of the intermarginal space we get the complicated nervous end-bodies described by Dogiel.

Contino lastly proceeds to discuss the embryology of the region and records the results of his examination of eight human embryos in different stages of development. R. GRUBER.

V.—THE PUPIL AND MENTAL DISEASES.

Bertozzi, A.—The condition of the pupil in some mental diseases. *Annali di Ottalmologia*, Vol. XXXV (1906), fasc. 5-6, p. 448 to 505.

The long and conscientious memoir of **Bertozzi** begins with a review of the pupillary functions in the normal state, amongst which the author is wrong in applying the term *reflex* to associated or synergic contraction with accommodation and convergence. The 901 patients examined by the author may be classified thus : pellagric insanity, 10 ; alcoholic insanity, 29 ; general paralysis, 20 ; idiocy, 56 ; senile dementia, 34 ; melancholia, 46 ; circular psychosis, 10 ; neurasthenia, 8 ; hysterical females, 13 ; epilepsy, 114 ; dementia precox, 349 ; paranoia, 29 ; imbecility, 134. During a period of about six months all the patients had their pupils examined several times. The details must be read in the original. We can only reproduce some of the conclusions. In all these mental diseases pupillary alterations, sometimes permanent, more often transitory, can be noted. The permanent alterations are probably due to deep organic lesions, and the transitory alterations to functional troubles of the nerve paths or of the pupil motor centres. Permanent alterations of the pupil are much the most frequent in constitutional affections (general paralysis, alcoholism, pellagra), while transitory changes are more often observed in mental diseases properly so called (dementia precox, paranoia, imbecility). In the chronic cerebro-spinal forms, also, permanent pupillary alterations predominate. Progressive general paralysis is specially characterised by the frequence, multiplicity, and variety of the pupil changes, which become manifest especially in the second and third periods of the malady. Among paralytics one sometimes observes the abolition of the palpebral reflex and sometimes paralytic myosis through lesion of the sympathetic ; in the other cases examined the myosis was always due to spasm of the sphincter. (The differential diagnosis is carried out by the use of homatropin. A 0.50 per cent. collyrium causes a slight dilatation, due entirely to paralysis of the sphincter, when the myosis is paralytic, and, on the other hand, causes a considerable mydriasis when the myosis is spastic and the sympathetic innervation of the dilatator is retained). The light reflex is very often altered in general paralysis, and the Argyll Robertson sign is found more often in the second than in the first or third periods. After general paralysis the most frequent pupil changes are shown by chronic alcoholism and pellagra ; the changes consist in anisocoria and abolition of the light reflex.

In alcoholism one also often meets with permanent spastic myosis. In idiocy, senile dementia, and melancholia, permanent alterations of the shape and functions of the pupil are often encountered. With equal frequency, or nearly so, these same alterations are found in mania, circular psychosis, and epilepsy. In hysteria and neurasthenia pupil modifications are rare and always transitory. In dementia precox alterations of the pupil are much less frequent than certain authors would lead one to suppose, and they are almost always distinctly fugacious, a characteristic which belongs also to pupil changes in paranoia and mental imbecility. In conclusion, although there are often pupil modifications in mental diseases, it is not possible to attribute to each one of these diseases any particular alterations of the pupil. For instance, the deformity of the pupil so frequently seen in general paralysis, is also met with in circular psychosis ; and the anisocoria, myosis, bilateral mydriasis, anomalies of the light reflex and of the associated reflex, which are all very frequent in the same paralysis, are, more or less frequently found in other mental affections. Even the Argyll Robertson phenomenon, which is supposed to belong only to tabes and general paralysis, is found in other cerebro-spinal affections, and even in dementia precox. The methodical examination of the pupil should not, however, be neglected in mental diseases, for it is capable of assisting greatly in the diagnosis. It must be borne in mind especially that frequent and permanent alterations of the pupil belong to diseases of toxic origin or of chronic character, while those which are slighter and transitory, are found in cerebro-spinal affections, which are functional rather than organic.

A. ANTONELLI.

VI —SYMPATHETIC DISEASE.

(1) **Burnham, G. H. — A discussion on sympathetic ophthalmia.** *British Medical Journal*, December 29th, 1906.
(2) **Lawson, Arnold.** *Ibid.*
(3) **Oliver, Charles A.** *Ibid.*
(4) **Fergus, A. Freeland.** *Ibid.*
(5) **Byers, W. Gordon.** *Ibid.*

(1) **Burnham's** paper is one in which the "combined treatment" advocated by him is credited with a great deal of effect. His experience leads him to say that where enucleation might be advisable only as prophylactic of sympathetic ophthalmia, and not on account of the injury *per se*, he considers

the question of retaining the eye and using the combined treatment. Burnham considers that "sympathetic irritation" and "sympathetic inflammation" are not essentially different conditions but have the same origin, whatever that may be. A summary of Burnham's book on combined treatment, namely, the hypodermic injection of pilocarpine along with the internal administration of mercury and iodide, will be found on p. 656 of THE OPHTHALMOSCOPE for 1906.

(2) **Lawson** points out that whereas a surgeon of great experience in eye injuries may be able to make up his mind definitely and immovably as to the correct course to pursue in a difficult case, the surgeon whose experience is limited would be thankful for some code which he might apply where a judgment cannot be founded on his own experience. He is of opinion that a small committee might well be formed to draw up some such code, and puts forward his own views in the form of answers to five questions. It is impossible to abstract these answers without transcribing most of the article, but the questions themselves may be quoted, *viz.*:—

(1) Can it be definitely stated of any wound of the globe that it will inevitably produce sympathetic ophthalmia in the other eye?

(2) If not, what are the lines upon which a surgeon should decide upon immediate removal of the globe?

(3) What are the considerations which may decide him to attempt to save the eye?

(4) In the later history of a case, short of definite evidence of commencing sympathetic ophthalmia, what symptoms, if any, should decide the surgeon in advising enucleation?

(5) Are there any premonitory symptoms which may accurately be described as heralding the approach of sympathetic ophthalmia, and upon the advent of which a surgeon, by immediate enucleation, may prevent the onset of the disease?

Regarding sympathetic "irritation" and "inflammation," Lawson states that the former "is now understood to be simply the expression of a reflex neurosis, and does not necessarily portend the advent of sympathetic ophthalmia."

(3) **Oliver** holds that "sympathetic irritation" and "sympathetic ophthalmia" are simply different stages of "transferred ophthalmia." He discourages the use of the term "sympathetic" in this connection, also the use of the term "irritation," and considers that "ophthalmia" is not a term which ought to be applied to any form of inflammation of the interior of the eyeball. After a study of the statistics at Wills' Hospital, Philadelphia, Oliver has found, among many interesting data to be published later, that since the advent of

X-rays and improved methods of removal of foreign bodies, better treatment of injured eyes and greater hygienic precautions for men working at dangerous trades, the number of recorded cases of the condition "has been, in spite of a vast increase of cases which are ordinarily supposed to be provocative of it (some 62 per cent.), actually reduced nearly 80 per cent. of the former proportionate amounts, both singly and combinedly in decade periods, within the past ten years."

(4) **Fergus** describes an ophthalmic condition which he has provisionally named "sympathetic degeneration." It is quite distinct from sympathetic irritation or ophthalmitis, and consists in a concentric contraction of the visual field of the sympathizer, with, in some cases, a reduction of visual acuity. The condition does not progress to blindness. A table is given which summarises the perimetric findings in twelve cases taken almost at random from a larger number, and notes of these cases are also given. In only one of the twelve cases is it definitely stated that there were no signs of sympathetic ophthalmitis, but, from the context, one gathers that such signs were absent in all the cases. The concentric contraction of the fields, without other symptoms, is undoubtedly very striking, especially in those cases in which a full field has been found, under observation, to give place to a contracted one.

(5) **Byers** relates "A case of sympathetic ophthalmia which followed a Mules' operation and ended in recovery." The author considers it to be highly improbable that the Mules' operation was the cause. The point is, that two weeks after the operation sympathetic ophthalmia came on, as the result of the original injury, and in spite of the Mules' operation. The facts as to dates, etc., may be summarised:— August, 9th, 1900, severe injury to the right eye; August 10th, vision p.l.: wound trimmed, conjunctival flap. Forty days later, Mules' operation. Fourteen days later, misty vision of uninjured eye. Four days later, typical sympathetic ophthalmia. The cyclitis and neuro-retinitis ran their course in about 18-20 months. Four years after the subsidence of the symptoms the acuity is nearly $\frac{6}{9}$ with correction; tension normal. No special changes in fundus.

ERNEST THOMSON.

VII.—LIGHT TREATMENT IN DISEASES OF THE EYE.

Hertel, E.—Experimental and clinical researches on the application of local light-treatment in affections of the eye, especially in ulcus serpens. von Graefe's *Archiv f. Ophthalmologie*, Bd. 66, 2, 16 Juli, 1907.

The excellent results of Finsen's light-treatment in lupus vulgaris seemed to justify hopes that the method might prove beneficial in affections of the eyeball, especially in ulcus serpens, since the bactericidal action of the so-called chemical rays seemed to be here particularly appropriate. Unfortunately, Ogneff and Widmark have proved that the application of the short-waved part of the spectrum affects the ocular tissues and the superficial structures, as well as the lens and retina. If we examine the action of these kinds of rays on different animal and vegetable cells, we find that they act first as a stimulus, but that this primary action soon leads to paralysis and death. In reality, this effect is essentially the same, whatever part of the spectrum we apply, only the long-waved rays of the visible part of the spectrum take a longer time to act, especially the ones beyond the green. This seems at first to offer a means of "dosage," but, unfortunately, tissues with pigment—as the retina—show this difference very much less marked, and are thus easily affected by rays of any length (Widmark, Birch-Hirschfeld). Here Hertel's experiments come in. He was able to demonstrate that in the spectrum of metal-sparks, the long-waved rays show much less energy than the short-waved ones. By using the magnesium spectrum he could show that after introducing bacteria in a small quartz-camera first in the anterior chamber and then into the vitreous, the action of the ultraviolet rays is so much attenuated by the superficial tissues, that only a very slight effect is produced on the first, and none whatever on the last. For various reasons the magnesium spark does not answer very well, and Hertel now uses an amalgam of cadmium and zinc, with an arc of 3-4 mm. at 2.5 ampères, but this can be somewhat increased without danger. It may be at once stated that no complication or untoward effect whatever resulted from this treatment. Its effect consists, besides the direct bactericidal action, in local reaction, hyperæmia, and œdema of moderate extent, which all act as curative agents and also in direct action on the tissue (deoxydation, karyokinesis, and cell-proliferation). There is always a latent stage between application and reaction, which is shorter if the intensity of irradiation be increased.

These experimental results Hertel submits to the clinical test, to which the second part of this paper is devoted. It must be borne in mind, that in cases where the simple light-treatment did not result in speedy regression, cauterisation and Saemisch's operation were resorted to, although always combined with irradiation. Of course, the final results in these cases were much less encouraging. It must also be remembered that results obtained by different surgeons at different times hardly bear

comparison. Still it must be admitted that all cases, unless specially malignant, were first submitted to the usual conservative treatment, and only irradiated if really progressive; so that quite amenable cases are not included in Hertel's statistics. Under these circumstances, Hertel's results are extremely good, especially considering the excellent optical results, due to the very thin scar which is left behind. To illustrate his method of procedure one of the 26 cases of his first series (irradiation only), selected at random, may be quoted:

H. S., 57 years, admitted April 24th, 1904. Five days ago something had blown into her eye while walking; pain followed the day after. Right defect 5.0 mm. long, and 2.0 mm. broad, in the upper-outer quadrant, with infiltration of bottom and edges, especialiy the outer and lower ones. Hypopyon of 2.0 mm. Blennorrhœa sacci lacrymalis. April 25th, morning and evening, three minutes' irradiation; at night increase of irritation, infiltration downward more greyish and thicker. April 26th, hypopyon much smaller, external edge of ulcer still infiltrated, but clear at the periphery. April 27th, eye paler, infiltration less. April 28th, begins to cover with epithelium. May 6th, discharged. A facette to the extent of the ulcer, slightly vascularised, V.R.—0.5 D.$\frac{5}{10}$.

As the clinical material of the Jena *Augenklinik* has been carefully collected, the results of different methods of treatment can be roughly compared. The first group of cases was published by Schulz in 1896, when the results for one reason or other proved particularly satisfactory. The second group were collected by Doetsch between this date and 1900. The third group was by Hertel himself before he took up the light treatment, and the fourth contains the results of the light-treatment either by itself or combined with surgical measures (cauterisation or Saemisch, or both):

	Treatment by Cauterization.			Treatment by Irradiation.
	Schulz.	Doetsch.	Hertel.	Hertel.
Number of Cases ...	43	45	29	44
V. > $\frac{1}{10}$	8	8	4	21
V. = $\frac{1}{10}$	9	2	3	1
Counts fingers	24	22	12	14
Movements	2	8	5	5
No function	—	5	5	3

R. Gruber.

VIII.—SQUINT.

(1) Antonelli.—The frequency and pathogenesis of strabismus in relation to hereditary syphilis. (Frequenze e patogenesi dello strabismo negli eredo-sifilitici.) *Rivista Italiana di Ottalmologia*, January, 1906.

(2) Remy.—The relation and explanation of two curious facts which throw light on the nature of squint. (Relation et explication de deux faits curieux propres à éclairer le processus du strabisme.) *Recueil d'ophtalmologie*, mars, 1906.

(3) Adam, C.—On normal and abnormal retinal localization in squinting people. (Ueber normale und anomale Netzhautlokalisation bei Schielenden.) *Zeitschr. f. Augenheilk.*, August, 1906.

(4) Bettremieux.—On the surgical treatment of strabismus in children. (Traitement chirurgical du strabisme chez les enfants.) *L'Ophtalmologie Provinciale*, T. III, p. 185, mars, 1907.

(1) Many children affected with hereditary syphilis suffer also from squint: the proportion would probably reach at least 50 per cent. It is not easy for ophthalmic surgeons to know what percentage of squint is due to hereditary syphilis. It is easier for syphilologists to estimate how many of these children suffer. There are many ways in which the squint may be caused—by disturbances of the central mechanism, by disturbances of the motor mechanism, and by the multiple forms of inflammation which may attack the eye itself.

HAROLD GRIMSDALE.

(2) **Remy** had under his care a girl of about 9 years of age who suffered from divergent strabismus. After six months treatment, by means of orthoptic exercises and the diploscope, binocular vision was regained. Soon after it was noticed that she had developed a convergent squint which occasionally would suddenly become divergent. At the first visit the refraction appeared to be emmetropic, but later hypermetropia manifested itself, and it took R. +1.50 and L. +1 to maintain binocular distant vision, and R. +3 and L. +2.50 to maintain binocular vision for reading.

The explanation of the production of this form of squint, which Remy has designated "unstable," is as follows:—the initial condition was one of slight anisometropia with a deviation outwards owing to insufficiency of the internal recti. When the latter was cured by treatment, internal squint developed in the

ordinary way, and although intermittent at first, would, in all probability, have become fixed had the condition been neglected. The danger of surgical intervention in such cases is apparent. Had either rectus been cut a deviation in the opposite direction would have been inevitable. Remy finds his diploscope of great value in the choice of suitable glasses in these cases.

A second observation is also instructive. A squinting patient, after some exercise and the wearing of glasses, showed a decided diminution in amount of squint, but was unable to fuse the letters in the diploscope. It was, however, noted that she could fuse unlettered coloured discs, *i.e.*, the squint disappeared when the two eyes had only to observe coloured discs without letters, but when one of the eyes was obliged to make the least effort of accommodation in order to see a letter the associated convergent effect brought on the squint. J. Jameson Evans.

(3) This important paper is a continuation of the work done on this subject by v. Michel and does not permit of abstract. The paper is very condensed as it is, and would practically have to be translated and published *in toto*.

A. Levy.

(4) **Bettremieux** considers that in cases of convergent squint, in which optical treatment has failed, it is advisable to operate as soon as possible, and believes that tenotomy can be performed on the *fixing* eye without risk of secondary divergence.

R. J. Coulter.

IX.—TRANSPLANTATION OF THE CORNEA.

O'Meara, Capt. E. J.—The operation of transplantation of the cornea. *Indian Medical Gazette*, March, 1907.

O'Meara operates only in cases where the patient is unable to perceive light (!). He slices away the greater portion of the thickness of the leucomatous tissue with a Graefe's knife, repeatedly transfixing superficially. After the removal of each strip of tissue the perception of light is tested. Successive layers are removed until the danger of opening the chamber appears imminent. Practically, some semi-transparent portions of the deeper layers are always found, which permit perception of light, or even of counting fingers. Should any leakage of aqueous take place, the completion of the operation is postponed for three to five days, after which the cut surface is freshened up at its edges and the operation continued.

When the paring down of the patient's leucoma is nearly

completed, an assistant in an adjoining room rapidly chloroforms a dog, so as to kill the animal in a minute or a minute and a half. Two or more fine silk sutures having been passed through one of the dog's corneæ, almost the entire cornea is removed with a cataract knife. All bleeding having been arrested from the patient's eye, the dog's cornea is placed over it, and retained in position by passing the sutures through the ocular conjunctiva. The transplanted cornea being larger than the surface it has to cover, the marginal portion comes away later as a complete ring, leaving the central portion adherent. Irrigation with salt solution is practised daily after the second day. The transplanted cornea retains its transparency, except (1) when it has been unnecessarily manipulated; or (2) when aqueous humour comes in contact with it, leaking through a perforation.

The result is given in one case only. A woman, previously without perception of light, was able, six months after operation, to move about the house and out-of-doors without help. O'Meara thinks that the improvement in the appearance of the eye alone justifies the operation. H. HERBERT.

X.—EXANTHEMATOUS KERATITIS.

Trantas.—**Exanthematous superficial keratitis in measles and other exanthemata. (Kératite superficielle exanthématique pendant la rougeole et d'autres maladies exanthématiques.)** *Recueil d'ophtalmologie*, août, 1907, and *Bull. et Mém. de la Soc. Française d'ophtalmologie*, 1907, p. 592.

Trantas, in his paper to the *Société d'Ophtalmologie de Paris* in 1901, estimated that superficial punctate keratitis occurred in 76 per cent. of cases of measles. Morax examined twenty-seven cases in Paris and did not find a single case of keratitis. Trantas has since examined a large number of cases most carefully. He finds that by making the examinations more frequently and with the corneal microscope, and by staining with fluorescein and eosin, the number of cases in which the cornea is affected is at least 90 per cent. The corneal affection generally assumes the form of very fine punctate deposits in the superficial layers of the cornea, and but rarely affects the epithelium. These spots are hardly ever visible to the naked eye: hence the necessity to use fluorescein and the corneal loupe.

Larger spots, visible to the naked eye, or one or more fine linear deposits, single or double, straight, angular or curved, regular or irregularly serrated or varicose, may be seen, either alone or

associated with the punctate deposits. There is no change in the sensibility of the cornea, and the vision is only affected when the deposits are confluent and occupy the pupillary area. One or both eyes may be affected simultaneously or successively. The corneal troubles appear within one to eight days after the onset of the rash, and generally disappear a little time after the skin eruption. Some of the corneal lesions, particularly the linear form, appear and disappear, to re-appear again in the course of a few days. Some of the spots and lines stain well with fluorescein and eosin, while others do not.

Similar lesions of the cornea are found in erythema polymorpha, in syphilis, in small-pox, and in chicken-pox, pemphigus, and eczema.

In erythema polymorpha the cornea becomes affected late in the course of the disease, when the fever has subsided. The lesions, compared with those in measles, are more liable to affect the periphery of the cornea, are often more deeply situated, so that they refuse to stain with fluorescein; they are often larger and more irregular, the linear lesions are more frequent, and they last about a month, as compared with about a week in measles. The syphilitic lesions are much the same as those of erythema. The lines are generally straight in syphilis, whilst they are irregular or zigzag in erythema.

Exanthematous superficial keratitis was found in 11·5 per cent. of cases of small-pox. The lesions are comparatively few, and consist often of one diffuse patch or a few isolated points or one line. Two cases of phlyctenule, a shallow ulcer in two (fatal) cases of keratomalacia were met with. The lesions in chicken-pox are fine and very ephemeral.

Those of pemphigus and eczema are mostly linear, very fine and superficial, and stain well with fluorescein. In some cases there is a diffuse affection of the epithelium, and ulceration, visible to the naked eye, was recorded in one case of pemphigus.

J. Jameson Evans.

XI.—CATARACT.

(1) Santos-Fernandez, J.—Posterior capsular opacities after operation for cataract. (Opacités de la crystalloïde postérieure après l'opération de la cataracte.) *Recueil d'ophtalmologie*, mars, 1906.

(2) Hirschberg, J.—The cataract operation according to Antyllos. (Die Star-Operation nach Antyllos.) *Centralbl. f. prak. Augenh.*, April, 1906.

(3) Hirschberg, J.—On the history of cataract operations. (Zur Geschichte der Star-Operation.) *Centralbl. f. prak. Augenheilk.*, Mai, 1906.

(4) Lagleyze.—Iritis with hypopyon, occurring in a patient operated on for cataract, and secondary to empyema of the maxillary antrum. (Iritis con hipopion en un operado de catarata, originado por empiema del seno maxilar.) *Archiv. de Oftal. Hisp.-Amer.*, June 19th, 1906.

(5) Graefenberg, E.—A clinical note on cataract due to iron. (Ein Beitrag zur Casuistik der Eisencataract.) *Archiv f. Augenheilkunde*, Juni, 1906.

(6) Köllner, H.—Experiences derived from 1284 cataract extractions with iridectomy. (Erfahrungen an 1284 Kataraktextraktionen mit Iridektomie.) *Zeitschr. f. Augenheilk.*, Juni, 1906.

(7) Laferrère.—On loss of vitreous in cataract operations. (De l'issue du vitre dans la cataracte.) *L'Ophtalmologie Provinciale*, III. 57 July, 1906.

(8) Chavez.—Avulsion of the anterior capsule in the operation of cataract extraction. (El arrancamiento capsular en la operacion de la catarata.) *Anales de Oftalmologia*, Sietiembre y Octubre, 1906.

(9) Fischer, F.—A communication regarding prolapse of the depressed lens into the anterior chamber. (Mitteilung über Luxation des reklinirten Linsenkerns in die Vorderkammer.) *Arch. f. Augenh.*, November, 1906.

(10) Bistis, J.—Cataract formation after an electric shock. (Beitrag zur Kataraktbildung nach elektrischem Schlag.) *Zeitschr. f. Augenheilk.*, December, 1906.

(11) Treu, E.—Cataract as a premonitory symptom of tetany. (Katarakt als Frühsymptom bei Tetanie.) *Arch. f. Augenh.*, Februar, 1907.

(12) Dor, H.—An interesting period in the history of cataract. (Une période intéressante de l'historique de la cataracte.) *Revue générale d'ophtalmologie*, 30 avril, 1907.

(13) Gidney, Captain H.—A plea for a more general use of Desmarre's eyelid retractor in cataract extraction. *Ind. Medical Gazette*, May, 1907.

(14) Callan, Peter A.—Operations for secondary cataract. *Journal of the American Medical Association*, June 22nd, 1907.

(15) **Ray, J. Morrison.—Loss of vitreous humor in the operation for extraction of cataract.** *Journal American Medical Association*, July 6th, 1907.

(16) **Menacho.—The spontaneous cure of cataract. (La curacion espontanea de la catarata.)** *Arch. de Oftal.*, August, 1907.

(1) **Santos-Fernandez** finds that discission of capsule with one or two needles is liable to be followed by detachment of the retina. He has therefore abandoned the needle for a very fine Graefe knife, which he introduces through the periphery of the cornea. J. JAMESON EVANS.

(2) **Hirschberg** describes the operation of cataract extraction from the Arabic translation of the original Greek work of Antyllos. This original text is lost, and the Arabic text is to be found in the Escorial in Madrid. A. LEVY.

(3) **Hirschberg** in this paper proves that Latyrion, who was supposed to be a Greek surgeon of about the ninth century, really had no existence at all, but, as to be seen in the Codex 6912 of the Bibliothèque Nationale, is merely a false reading for Catityrion, the Arabic for χαγ ἰτρεῖον, a phrase which Galen uses to mean the workroom of the surgeon. A. LEVY.

(4) In **Lagleyze's** case, iritis and hypopyon appeared ten days after cataract extraction, when the eye had been quiet for a week. Under treatment the inflammation subsided, but the patient noticed a painful swelling of the gum of the same side. A molar root was extracted, and a flow of pus followed, but although the eye remained free from deep injection, there was still œdema of the conjunctiva. Finally, Lagleyze drained the antrum, evacuating a large amount of pus, and with this the last eye symptoms disappeared. HAROLD GRIMSDALE.

(5) In a short paper, Graefenberg describes the appearances caused by the absorption of iron after an injury. The case showed the characteristic staining of the iris and yellowish-brown deposits underneath the anterior capsule of the lens. The lens itself was greyish-green and opaque. Opposite the point of entrance of the foreign body, it presented a notch due to absorption of the lens fibres in the neighbourhood of the rent in the capsule. The cataract was removed. No iron was found. A piece was supposed to have been left in an attempt at extraction of the foreign body some years previously.

PERCIVAL J. HAY.

(6) The clinical material in the great Berlin eye clinic of v. Michel has given 1284 cataract operations in five years. These are analysed by **Köllner**, and with the exception of a rather low percentage of infections, showed most of the usual results and

complications which would be found in such a large series. A remarkable fact is that only 5 % of the cases required a subsequent needling. A. LEVY.

(8) The value of this modification of the operation of extraction has not been properly estimated, and the literature dealing with it is small. **Chavez** adds his testimony, in order that the knowledge may become more diffused. In his opinion, the risks of the procedure have been exaggerated; he has never known a case of dislocation of the lens, and this is the chief danger mentioned. Occasionally he has known the whole capsule drawn with the forceps out of the eye; the anterior layer must be, in these cases, thicker than normal, and the zonule degenerate. Chavez finds, as generally admitted, that avulsion of the anterior capsule is the best safeguard against secondary cataract at present known.

HAROLD GRIMSDALE.

(9) **Fischer** describes the case of a patient who had undergone an operation for cataract, and in whom a small mass resembling lens-substance was found in the anterior chamber, causing considerable pain and interference with vision. After removal the substance was found to consist chiefly of cells, the nature of which was uncertain. PERCIVAL J. HAY.

(10) **Bistis** reports the case of a man who fell across an electric railway in such a manner that his right eyebrow came in contact with the negative rail and his body lay across the positive one. The rails carried a current at the time of 500 volts. He remained unconscious for 3 hours and on awakening, noticed nothing amiss. A month later he began to notice failure of vision in the right eye, which was found to present fine dot-like opacities in the anterior layers of the lens. At the end of four months the cataract had become complete and was extracted, good vision resulting. This case bears out the theory that cataract resulting from electric shock is not due to the intensity of the light but to some chemical or other effect of the current itself acting directly. A. LEVY.

(11) **Treu** records the case of a woman, aged 33, in whom cataract appeared in both eyes in the course of a month without any apparent reason. The author regards the case as one of latent tetany. PERCIVAL J. HAY.

(12) **Dor's** article consists of certain portions extracted from the author's work to be published in the *Encyclopédie française d'ophtalmologie.*

(13) **Gidney** reports that with the ordinary speculum his vitreous escapes in cataract extraction averaged from 7 to 9 per cent., but that with Desmarre's retractor he was able to reduce the losses to nearly 2 per cent. And in his last 67 cases of

ordinary capsule-laceration operation, he had no vitreous losses at all, using the retractor. H. HERBERT.

(14) **Callan's** conclusions are as follows :—

"Secondary membranes, consisting of capsule, gauze-like in texture, readily yield to a discission performed with the knife needle under artificial illumination.

"Thin secondary membranes, consisting of one or more bands, require different handling. Simply avoiding these bands in performing a discission with the knife needle is a conservative course that gives a good visual result, followed, however, in some cases by subsequent disaster, due to the traction of the bands on ciliary processes.

"Tough resilient bands can be disposed of successfully by the expert use of the thin Graefe knife in one operation by cutting at a right angle to their long axes. Thick, dense secondary membranes within the area of a fairly large pupil can be disposed of by the use of a Graefe knife in two operations, although I do not consider this the best course to pursue.

"Bowman's two-needle operation for similar conditions, viz. dense, opaque membranes, covering a fairly large operation field, is mentioned merely to deprecate its use. The essential feature of the method depends on tearing the dense membranes.

"Judging by my experience in handling all forms of secondary cataract, other than the thin diaphanous membranes, the forceps scissors affords the safest and most reliable of all instruments. By a judicious use of the De Wecker scissors, the toughest membrane can be cut without any traction, either on iris tissue or ciliary processes. In all complicated forms of secondary cataracts, occluded pupil, incarceration or prolapse of iris, it is the only instrument of which a proper use combines a minimum risk with a maximum of benefit.

"Do not tear secondary cataracts : always cut them.

"Disasters following secondary operations are, in the main due to tearing methods in operating. The least danger is from infection. C. A. O.

(15) **Ray** has found that there seems to be great diversity of opinion among operators as to the exact consequence, of loss of vitreous humor occurring as a complication in the operation for extraction of cataract. A general idea exists that it is an incident that they would rather not occur, but that it has but little effect on the result of the operation. "It has appeared to me," he justly says, "that experience should give us more definite knowledge on this subject, and that we should know with exactness how much it militates against the final result."

Being a more complicated structure than the aqueous, loss of vitreous makes more demands on the reparative powers of the

eye than does loss of the aqueous fluid when once it has escaped, the replaced humor never takes on the histologic make-up of the normal structure. A new fluid secreted from the same source as the aqueous and with practically the same chemical make-up may fill out the space occupied by the lost vitreous, but the fibrillary network of the vitreous is never regenerated when lost.

Being of the opinion, from personal observation and experience, that loss of vitreous added largely to our percentage of failures, he asked a number of operators of recognised experience as to their personal observations, requesting answers to the following questions: 1. Does loss of vitreous at the time of the extraction increase the danger of primary infection? 2. Does it increase the danger of irido-cyclitis during the stage of healing? 3. Does it tend to produce secondary degenerative changes in the eye after a few months or years?

As a result, and from a careful review of the subject, he has been led to the following conclusions:—(1) Loss of vitreous at the time of an extraction adds to the danger of primary infection, this danger being irrespective of the quantity of vitreous lost, but depending largely on the care used in the preparation of the field of operation. (2) The danger of irido-cyclitis during the stage of healing is materially increased by loss of vitreous. The increased activity in the blood vessels and lymphatics during the repair of the traumatism necessary to the operation for cataract being overtaxed excites changes in the iris and ciliary body that end in a hyalitis, with closing of the pupillary space and anterior phthisis. (3) When vitreous is once lost the material taking its place is probably aqueous, the framework is never re-formed, and the vitreous becomes fluid throughout. Floating particles increase in amount as time goes by, fibrillary bands are thrown out from the retina to take the place of the reticulum of the vitreous. These bands contract, causing minus tension and retinal detachments, followed by the characteristic square atrophied eye due to the action of the recti muscles on the softened globe. C. A. O.

(16) There are three methods of spontaneous cure, *viz.*, by disappearance of the opacity, by luxation of the opaque lens, and by absorption. HAROLD GRIMSDALE.

XII.—DISLOCATION OF THE EYEBALL THROUGH THE PALPEBRAL FISSURE.

Beverley, Tucker.—*Journal of Nervous and Mental Disease*, June, 1907, p. 391.

The following two cases are recorded in detail :—

Case I.—The patient was a woman, aged 40, whose first symptom was a left facial palsy in November, 1903. In April, 1905, she had a "stroke," with indefinite after-symptoms. In July, 1905, she came under observation with pain in the back of the neck and inability to walk; she described attacks of *petit mal*. The only physical sign present was exophthalmos. This increased in the hospital, and one day the left eye was seen suddenly to become dislocated to such an extent that the lids contracted behind it. The eye-ball was replaced and the lids stitched over it for some weeks. Ten days after being discharged she was re-admitted with severe pain in the head; she was then found to have anæsthesia on the right side of the face and increased knee jerks. Various hysterical symptoms developed later, as did gummata over the tibiæ and clavicle. No signs of Basedow's disease were present besides the exophthalmos. Under anti-syphilitic remedies all the symptoms improved. The diagnosis was cerebral gumma. *Case II.*—The patient, a woman of 26, had suffered for some seven years from typical symptoms of Basedow's disease. The exophthalmos was so great that on several occasions the eyeballs had (separately) been spontaneously dislocated from the socket. This was also induced by a physician gently touching the lower lid, but the eyeball was easily replaced. The patient greatly improved under treatment.

ERNEST JONES.

XIII.—TRAUMATIC GLAUCOMA.

(1) **Peters.—Glaucoma after contusions of the eye and its treatment. (Ueber Glaucom nach Kontusionen des Auges und seine Therapie.)** *Klin. Monatsbl. f. Augenheilk.*, 1904, Bd. II, p. 545.

(2) **Villard.—Acute glaucoma consecutive to contusions of the eyeball (traumatic glaucoma). (Glaucome aigu consecutif aux contusions du globe oculaire [glaucome traumatique].)** *Ann. d'oculistique*, T. CXXXIV, p. 241, octobre, 1905.

(3) **Villard.—Three new cases of traumatic glaucoma. (Trois nouveaux cas de glaucome traumatique.)** *Ann. d'oculistique*, T. CXXXVI, p. 458, décembre, 1906.

(1) **Peters** gives particulars of two cases of glaucoma after contusion. He agrees with Sala in finding the explanation of the glaucoma in an alteration of the vitreous humour by the trauma, which is followed by disturbance of the filtration. In such cases a puncture is usually sufficient to heal the glaucoma.

A. BIRCH-HIRSCHFELD.

(3) **Villard** records three cases of acute traumatic glaucoma. The first occurred in a man, 66 years of age, as a result of a blow with a piece of wood, and was rapidly and permanently cured by medical treatment (myotics, leeches, etc.). The second patient, a man, 52 years of age, was injured by a piece of stone, and ten days later had a typical acute glaucoma. Operation was refused, and although the eye became quiet under medical treatment, its vision was permanently lost. The third patient, a boy 6 years old, was struck on the right eye by a cork ball from an air pistol. The injury caused hyphæma, with T. + 2 and great pain. The pain and tension were relieved by treatment with leeches, myotics, dionine, etc., but when the hæmorrhage became absorbed, it was found that the pupil was still dilated, and that there was a large detachment of the lower part of the retina. A year later the tension was normal, and the detachment had become completely cured, but in its place there was a large peripheral area of atrophic choroido-retinitis, and the optic nerve was atrophied. Villard has been able to find only 21 recorded cases of traumatic glaucoma. He discusses the conclusions to be drawn from these and from his own three cases.

R. J. COULTER.

(3) In the *Annales d'oculistique* for October, 1905, **Villard** published a paper on traumatic glaucoma, in which he recorded three cases of his own and analysed twenty-one others which he found described in ophthalmic literature. He now reports three further acute cases, two of them in patients 63 years of age, and the third in a man 39 years old. In each case the injury was a contusion from a blow with a good-sized piece of wood. Recovery with good vision followed treatment with myotics, hot fomentations, and mastoid leeching. R. J. COULTER.

XIV.—CYSTICERCUS IN THE EYE.

(1) Morton, A. Stanford and Coats, G. — A case of subconjunctival cysticercus. *Transactions Ophthalmological Society U.K.*, 1906.

(2) Wood, D. J.—Notes on an eye containing a cysticercus. *Ibidem.*

(3) Wood, D. J.—Case of intraocular cysts. ? Hydatid. *Ibidem.*

(4) Cirincione.—Alterations due to cysticercus in the early stages after its penetration into the eye. *La Clinica Oculistica*, March, 1907.

(5) Cirincione.—The early changes produced in the eye by cysticercus cellulosæ. *Arch. f. Augenheilkunde*, Juni, 1907, p. 263.

(1) **Morton and Coats** give a careful clinical and pathological account of a case of cysticercus (tænia solium) which occurred as a flattened cystoid swelling beneath the left caruncle. It was opaque, showed no white or yellow spot on its surface, and was indistinctly fluctuant. The patient, a man aged 33, had served in India and South Africa, and had noticed the swelling for two years. Recently he had had epileptiform attacks. The correct diagnosis was not made clinically, for the cyst was believed to be either a dermoid or a simple cyst. It had caused no pain; V. $\frac{6}{6}$; fundus normal. Pathologically, the tumour was found to be a necrotic cysticercus cellulosæ. The details of microscopic structure, so far as visible, are given, and there is a sketch showing a section of the parasite "reconstructed" from the sections made. The details as to hooklets, suckers, &c., make it certain that the parasite was the bladder worm stage of tænia solium. The authors point out that the epileptiform attacks may indicate cysticercus in the brain. A full bibliography of the subject is appended. ERNEST THOMSON.

(2) **Wood** records the case of a woman of 25 years whose right eye became blind and painful. It was excised and found to contain "a cysticercus whose cyst occupied the most of the inner side of the eye." ERNEST THOMSON.

(3) **Wood** relates the case of a man of 52 years. After an illness, supposed to be malaria, the right eye was blind from irido-cyclitis. It became painful and was excised. "In one half of the eye there was a cyst the size of a lentil seed about $\frac{1}{8}$ inch wide and $\frac{3}{32}$ inch long; in the other half were two shining, tense, nearly transparent, cysts. All were on the outer side of

the retina. The small cyst . . . was found to consist of a laminated membrane curling inwards." Neither of the cases mentioned by Wood was under his care clinically. They both occurred in the practice of another surgeon in South Africa.

ERNEST THOMSON.

(4) Many papers have been written, says **Cirincione,** on the eye that has been the seat of old-standing disease from cysticercus, but never before has it been possible to give an account of an eye in the early stage of the affection. This is the chief importance of the present communication. By a fortunate chance, Cirincione has been able to observe a case almost from the first days; and this eye, enucleated at the patient's request about 35 days after the attack of the parasite, is the subject of the examination. There are several points of the highest importance, since they enable the surgeon to decide which of the sequelæ are due to the parasite as a foreign body, and which to its proper nature.

The ophthalmoscopic examination of the eye before removal showed that the papilla was veiled by whitish material which gradually diminished as one passed to the retina. Over the inner border of the disc the appearances resembled those of opaque nerve-fibres, though the brilliancy was not so great.

The surrounding retina was not only turbid, but thrown into fine radial folds; below and externally, the peripapillary opacity joined a dense whitish mass, about $2\frac{1}{2}$ P.D. which was the seat of the scar made by the perforation of the cysticercus, visible at a little distance. Shortly before removal a large detachment of the retina appeared, and this led Cirincione to assent to the patient's desire.

The microscopical examination of the eye was very carefully made. The optic nerve even behind the globe, showed considerable increase in the number of small cells. In front of the lamina cribrosa the lymphoid infiltration increased greatly. Spreading from the optic nerve at the point of exit of the vessels, there was a delicate membrane of connective tissue overlying the retina; and this, by its contraction had thrown the anterior layers of the retina into folds and brought about its contraction. In many regions of the retina the rods and cones were degenerated.

All these inflammatory lesions are due to the action of the parasite by some toxic product; the patch of choroiditis and retinal disorganisation, through which the entrance into the vitreous was made, are due to mechanical action only. It is probable that the toxic action of the cysticercus depends on some bio-chemical action.

H. GRIMSDALE.

(5) **Cirincione** describes the clinical appearances and microscopic characters of the changes produced by a cysticercus

observed in a patient soon after it had entered the eye. When first seen, the parasite was situated between the retina and the hyaloid membrane, but soon afterwards it penetrated into the vitreous humour. It set up irritation of the optic nerve and retina, and led to the formation of a preretinal film. This film, together with a cellular infiltration of the retina, gave rise to a hazy appearance of the fundus. Shrinkage of the film, which was adherent in parts to the retina, caused detachment of the retina. A thin layer of cells and coagulated hyaloid material intervened between the parasite and the retina. At this spot the latter was transformed into connective tissue, otherwise it was normal. In the early stages "pre-retinal" spots were seen lying in front of the cysticercus. Microscopic examination showed them to consist of sub-hyaloid cell-nests. The author remarks that an operation for removing the parasite will only prove successful when the spots can be seen, and if the knife enters the space in which the cysticercus lies without injuring the hyaloid membrane. PERCIVAL J. HAY.

REVIEWS.

A Manual of the Diagnosis and Treatment of the Diseases of the Eye. By EDWARD JACKSON, A.M., M.D. Second Edition. Philadelphia and London: W. B. Saunders Co., 1907. Price 10s. 6d.

The changes in the second edition of Jackson's *Manual* are, as recorded in the preface, so numerous that we have read it as if it were a first edition; that is, practically, from end to end. The book is a good one and well known, yet one rises from its perusal with a feeling that the author has been forced to adopt a compressed style of writing, which here and there has resulted in a text which is not quite so clear as it might be. The plan of the book is not very different from that followed in other text-books of ophthalmology. The first four chapters dealing with the examination of the case and with symptoms in general are excellent. The theory of light refraction has never, probably, been more clearly and succinctly set out in an elementary way, and the effect of glass prisms and lenses is well described. On the other hand, the account of the refraction and accommodation of the eye and of skiaskopy, strikes the reader as too condensed to be easily assimilated. The formula A = P-R and its explanation have been omitted from the chapter on accommodation.

In this chapter also, the employment of "inches" in measuring the near point, while talking in "dioptres" of amplitude of accommodation, is incomprehensible. Again, there is no warning about the possible danger of cycloplegics in the advice given on page 128 as to their employment in the middle aged, although such warning is given under glaucoma on page 439. The theory of skiaskopy is just as difficult to follow in this as in other text-books. Myopia and its treatment are well described. The theory of astigmatism is good, though we would rather not depend on this manual for its practical correction. The chapter on disorders of the ocular movements is marred by some errors. Besides a confusingly short explanation of the projection of the false image in squint (page 197), on page 199 (line 28) "squinting" should read "non-squinting"; on page 227, "hyperexophoria" is omitted; on page 229 we find "Graefe's" test; on page 230 reference is made to "rotary deviation of the eye," though there does not seem to be any adequate mention of it previously; on page 233 (line 24) "base" ought, surely, to read "apex"; the words "visual field" occur repeatedly for "field of fixation"; and finally the angles α and γ have disappeared—a sign of the times, no doubt. The accounts of diseases of the conjunctiva and of the cornea are satisfactory. One may notice the absence of argyrol from the list of remedies, and the classing under one heading of purulent conjunctivitis of the adult and of the new born. The latter method of description loses more in clearness that it gains in brevity. On page 283 the author omits to mention the use of a local anæsthetic when cauterizing the cornea, though it is mentioned under "Operations" later on. In connection with iritis dionin is mentioned as an analgesic, but not as assisting atropin mydriasis. Further on it is not mentioned as an analgesic in absolute glaucoma. Sympathetic ophthalmia is well described, as are also the most important retinal and optic nerve diseases. The amblyopias—toxic, congenital, hysterical, and simulated—are very completely dealt with. From the description of albinism, nystagmus is unaccountably omitted. Cataract is detailed sufficiently, though some will object to the absence of bacterioscopic examination before operation. The chapter on glaucoma is plain and straightforward: on page 442, however, cocaine is said to "contract the iris"—a confusing expression. In connection with lacrimal abscess the advice given to slit the canaliculus is of doubtful value, especially to a beginner who, on the previous page (466) is advised not to attempt the operation of probing the nasal duct. Chapter xviii. on "Remedies and their Applications" is a useful one, in spite of some omissions—such as the omission of mercury with chalk from the list of mercurial preparations. In

dealing with operations the author is probably right in not being too liberal with different methods. There is a useful chapter on ocular symptoms and lesions connected with general diseases. At the end of the book a bibliography, which does not pretend to be anything like complete, will be useful to the student—especially to the American student, it may be hinted.

With one or two exceptions the text is free from those defects of style which one calls American. Some of the more important slips of the pen have been mentioned: there are others of less importance; for example, on pages 92 and 103 there are incorrect references to figures; kyanopsia and cataphoria might conveniently exchange their initial letters; Argyll Robertson appears, as usual, with a hyphen; and there are some typographical errors.

A great number of the illustrations, coloured drawings (10), as well as figures in the text, are signed E. J. We do not think we can compliment the author or the publisher upon figures 89, 102, 103, 104, 105 or 123. On the other hand, some of the black and white drawings of the fundus are excellent and superior to some of the coloured ones.

Finally, in spite of a few faults, which seem to be mainly the result of a desire to keep down the size of the manual, and of errors which can be corrected, the book is well adapted to the class of reader to which it is addressed, namely, the general practitioner, and the beginner in ophthalmology. E.T.

The Single Pathogenesis of Vascular, Secretory, and Nodular diseases of the Eye and Neighbouring Organs. (Patogenesi Unica Delle Malattie Vascolari, Secretive e Nodulari, Degli occhi e Degli Organi Vicini.) By A. de FALCO. 238 pages, with eight plates. Naples: Soc. Comm. Libraria. 1906.

The interesting work of de Falco, Medical Officer to the Military Hospital at Naples, is divided into three parts. The first is a criticism of the infective etiology of trachoma; the second records the experimental and histological researches of the author on the leucocytic and migratory genesis of granulations; the third studies the vasomotor and secretory neurosis of the ciliary plexus due to ocular fatigues and the action of this neurosis on the eyes, the nose, the pharynx, and the ears. Finally, the author confirms the symptomatology, which he describes by clinical observations, and discusses the treatment.

Among the author's principal conclusions, we may note the following: The ocular maladies which are termed functional are the consequence of reflex vasomotor and secretory troubles.

Reflex hyperæmia can lead to inflammation and the migration of leucocytes; these, in the tissue of the mucous membranes often constitute nodular formations which lead, later on, to the degenerative phases (fibrous degeneration and epithelial metaplasia). Papillary, follicular, and granular conjunctivitis are the consequence of leucocytic emigration; the only difference is in the site and length of the process; the clinical forms must be differentiated from the practical standpoint, but their origin is the same (hyperæmia) and their specificity does not exist. The path of the vasomotor or secretory reflexes is that of the neurons of the ciliary plexus, which are rendered very vulnerable by fatigue of the ciliary muscle in hypermetropes and astigmatics. Ocular fatigue has a considerable etiological importance for a number of affections of the eye and neighbouring organs. A. ANTONELLI.

Note sur quelques Troubles Oculaires Réflexes d'Origine Dentaire. (Note upon some Reflex Ocular Troubles of Dental Origin.) By Dr. A. BEAUVOIS. Tours: Imprimerie Paul Bousrez, pages 13.

This little reprint of a communication made to the Odontological Society of France is intended to remind both dentists and oculists that by direct anatomical relations and by their intimate vascular and nervous relations, the organs concerned in the respective specialties are likely to re-act upon one another. Most of the author's attention is given to the reflexes from the teeth to the eye region, such as lacrymation, paresis of accommodation, neuralgias, blepharospasm, mydriasis, and he raises the question whether a number of squints may not owe their onset to dental disease. E.T.

CORRESPONDENCE.

[While *The Ophthalmoscope* will at all times welcome correspondence from its readers, the Editors do not hold themselves responsible for any views expressed in this column.]

Filtering Cicatrices.

To the Editors of THE OPHTHALMOSCOPE.

SIRS,

In the current issue of THE OPHTHALMOSCOPE, Mr. Thomson Henderson undertakes to disprove the possibility of the formation of permeable sclero-corneal cicatrices, such as those by which Lagrange and I claim to relieve glaucoma.

I have recently operated upon over 20 glaucomatous eyes in this country by my method, and hope to show some of the results after a sufficient interval has elapsed.

They promise very well so far, except that in a few cases fistulous tracks are forming instead of merely filtering scars. In some of the cases no iridectomy has been done at all.

Would it not have been wise for Mr. Henderson to have seen some of the results before deciding that Lagrange and I are mistaken? He would scarcely then have ventured to maintain that our filtration œdema is merely episcleral thickening over the scar. The œdema extends far from the cicatrix, and the more marked the conjunctival thickening the more translucent is it, pitting with the slightest touch. And in cases where no œdema persists the slight protrusion over the scar, obtainable by pressure upon the globe, is conclusive evidence of permeability.

Yours faithfully,

H. HERBERT.

December 11th, 1907.

XEROSIS.

To the Editors of THE OPHTHALMOSCOPE.

Sirs,

In your review of Mr. Parsons' *Diseases of the Eye*, you say "It is impossible to agree with Parsons' statement that the mild form of xerosis accompanied by night-blindness and contraction of the field of vision, and by white patches on the conjunctiva, is an affection of adults, etc." In this connection Indian experience may be of interest to your readers. The condition you refer to is not uncommonly met with in Madras. In years of scarcity it is very common indeed, and shades off into severe and destructive keratomalacia. At the height of the scarcity-wave one sees a large number of eyes lost in this way, the patients being usually marasmic children, for whom death is the best result one can hope for. On the other fringe of the condition one meets with a number of cases in which xerosis alone or night-blindness alone is the only sign discovered. A very careful scrutiny of the conjunctivæ of the latter class may reveal a slight want of elasticity of the conjunctival tissue; whilst probably in the former a little more intelligence on the part of the patient would lead to the discovery that the night-vision was impaired. The usual treatment by tonics and cod-liver oil brings about a speedy cure in all or nearly all cases of a mild type.

I have had an analysis made of the cases of xerosis and night-blindness met with in this hospital from October 1st, 1906, to October 1st, 1907, during which period there has been no famine.

Four cases were below 4 years of age ...
Six were between 4 and 12 years of age, and
Five were over 12 years of age, the eldest being aged 20 years ... ...
} Total, 15 cases.

The statistics for the same period of the cases of xerosis or night-blindness occurring as the only symptom, closely bear out the above figures. I presume that it will be generally admitted that the xerosis, on the one hand, and the night-blindness, on the other, are merely expressions of malnutrition of the two coats of the eye concerned.

Yours truly,
R. H. Elliot,
Major I.M.S., Superintendent Government Ophthalmic Hospital, Madras.

22nd October, 1907.

NOTES AND ECHOES.

Appointments.

Mr. J. H. Yearsley has been appointed Ophthalmic Surgeon to the Royal Boscombe and West Hants Hospital. Dr. F. M. Chisolm has been appointed Associate Professor of Ophthalmology in the Medical School of the University of Maryland.

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Annual Meeting of the British Medical Association, 1908.

The seventy-sixth Annual Meeting of the British Medical Association will be held at Sheffield, England, in July, 1908, under the presidency of Mr. Simeon Snell, Professor of Ophthalmology in the University of Sheffield and Ophthalmic Surgeon to the Sheffield Royal Infirmary. The officers of the Section of Ophthalmology are as follows: President, Sir Henry Rosborough Swanzy, Dublin. Vice-Presidents, Sydney Stephenson, London; Charles Devereux Marshall, London; and Stanley Riseley, Sheffield. The honorary secretaries are Michael Aubrey Teale (4, Park Square, Leeds) and Leonard Robert Tosswill (34, West Southernhay, Exeter).

* * * *

Egypt.

THE autumn camps of the Travelling Ophthalmic Hospitals of the Public Health Department are now in full swing. One of them is working at the capital town of the province of Minieh in Upper or Southern Egypt, under the charge of Dr. George McLaren and Dr. Ahmed Fahmy, while the other is working at Chebin-el-Kom, the capital of the province of Menufieh in Lower or Northern Egypt, under the charge of Dr. Ward, Dr. Abd-el-Aziz Fahmy El Aguizy, and Dr. Ahmed Handy. As is usual at these camps, many more patients are applying for treatment than can be treated. There seems every prospect of a season full of work.

* * * *

Société française d'Ophtalmologie.

OUR old friend, the French Society of Ophthalmology, proposes to celebrate in 1908 the Anniversary of its twenty-fifth year by a Jubilee, to which delegates from the principal foreign Societies of ophthalmology will be invited. The programme will be announced later. The same society has selected for discussion in May next, "The treatment of injuries of the Eye." The discussion is to opened by Dr. A. Terson. The governing body, or *comité*, of the society is now composed of Drs. Bourgeois (Reims), de Lapersonne (Paris), Péchin (Paris), Rohmer (Nancy), Rollet (Lyon), Terson (Paris), Vacher (Orléans), Valude (Paris), together with Duboys de Lavigerie (Paris), as Secretary.

* * * *

The perils of Eye Work.

WE have had occasion to comment upon the vexatious proceedings in the County Court and elsewhere against Mr. R. Marcus Gunn, of an alien who rejoices under the several aliases of Schleifstein, Goldenfeld, and Collins. The ophthalmic history of this unhappy person is as follows: At his own request, the crystalline lenses were needled for high myopia at Moorfields by Mr. Gunn, and sight of six-twelfths and six-fifths was obtained. Six years later, however, the retina became detached in each eye at a few weeks' interval. This untoward sequel to the operation appears to have driven the patient to attempt most reprehensible reprisals, of which the latest is now before us in the shape of a

printed post card, the illiterate and grotesque contents of which are reproduced:

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* * * *

Middlemore Lecture, 1907.

THE Middlemore Lecture was delivered on December 12th last, by Mr. J. Jameson Evans, at the Birmingham and Midland Eye Hospital. The lecture, mainly intended for general practitioners of medicine, dealt with prophylactic measures in ophthalmology. In the course of his remarks, Mr. Evans entered a strenuous plea for the better instruction both of students and of midwives with regard to the prevention of ophthalmia neonatorum, and urged the advisability of appointing an ophthalmic surgeon on the staff of the new Birmingham Maternity Hospital.

* * * *

Obituary.

PROFESSOR FRANCESCO BUSINELLI died on November 27th last, in the seventieth year of his age, deeply regretted by a wide circle of colleagues, pupils, and friends. A pupil of von Arlt, Businelli was the first to teach ophthalmology in Rome.

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THE

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A MONTHLY REVIEW OF CURRENT OPHTHALMOLOGY.

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CONTENTS.

Original Communications—

1. W. H. De Silva, M.B., C.M., F.R.C.S.—Lepra Ophthalmica in Ceylon 70

Clinical Memoranda—

1. H. Work Dodd, F.R.C.S.—Bilateral Congenital Temporal Hair Islets: Accessory Eyebrows 77
2. H. Grey-Edwards, M.D.—On the Use of Staphylococcic Vaccine in the Treatment of Hypopyon-Ulcer 79
3. Percy Dunn, F.R.C.S.—A Monocular Method of the Correction of Ametropia 82
4. P. H. Adams, F.R.C.S.—The Connection between Inflammation of the Parotid Glands and Iritis 83

Review—

1. Ernest Thomson, M.D.—The Question of the So-called "Filtering Cicatrix" 84

Translation—

Dr. Bruno Wolff.—Injuries to the Eyes of the Child during Labour ... 88
(*Concluded.*)

Current Literature—

I. Juvenile Tabes 97
II. Psychoneuroses in Ophthalmology 99
III. Diagnostic Value of Physostigmine in Anomalies of the Pupil-Reflex 101
IV. One Hundred Cases of Injury to the Eye 101
V. Dislocation of the Eyeball in a Newly-born Child 103
VI. Operations on the Orbit 105
VII. The Ophthalmo-Reaction 107
VIII. Acute Conjunctivitis 109
IX. Mercuric Oxycyanide 115
X. Syphilitic Lesions of the Eyelids 117
XI. "After-Cataract" 118
XII. Tabetic Optic Atrophy 118
XIII. Blindness 119
XIV. Posterior Scleritis 123
XV. Treatment 124
XVI. Miscellaneous 130

Reviews 136

Notes and Echoes 148

ORIGINAL COMMUNICATIONS.

LEPRA OPHTHALMICA IN CEYLON.*

BY

W. H. De Silva, M.B., C.M., F.R.C.S.

SURGEON, VICTORIA EYE HOSPITAL; LECTURER ON OPHTHALMOLOGY, MEDICAL COLLEGE, COLOMBO, CEYLON.

The Ceylon Leper Asylum is situated on the banks of the river which passes by Colombo outside the city; it is an old institution which has been in existence for over 200 years. It now gives accommodation to nearly 500 cases; of these only 101 cases were reported as suffering from symptoms of eye disease during the period of my visits.

I examined all these cases *seriatim*. According to the Asylum Register:—

23 cases were reported as suffering from lepra tuberculosa.
33 „ „ „ lepra anæsthetica.
45 „ „ „ lepra mixta.

The most important lesion in lepra tuberculosa was a tubercular episcleral growth, which by preference started on the external pericorneal region. It generally takes many months before involving the cornea. The appearance in these cases is quite characteristic. There is, in the initial stages, a slight hyperæmia of the bulbar conjunctiva, and gradually the nodule shows itself, often having the appearance of a pinguecula, and this slowly extends on to the cornea, at first affecting the superficial layers, and in the later stages, involving the deeper structures. Another peculiarity in these cases, which was very frequently noted, was that the pupil showed a tendency to be dragged towards the nodule, and the pupil itself was often irregular.

Out of the 23 cases of lepra tuberculosa, five gave an hereditary history. The average duration of these tuberculous cases was nine years, the longest examined having suffered from the affection for 18 years and the shortest for one year. The average age of these cases was 31 years, the oldest being 50 and the youngest 11.

The commonest affection in these cases was infiltration of the eyebrows and eyelids, and the dropping or atrophy of the supercilia and cilia. In only two was there any nodular infiltration in the sclerotic or conjunctiva. In eight there was primary corneal opacity. In three there was a very early development of gerontoxon. What struck me most was the preservation of useful sight in these cases. In 14 of the cases

*Read in the Section of Ophthalmology at the annual meeting of the British Medical Association, August, 1907.

vision was more than $\frac{6}{12}$ and J. 4. In three, vision could not be ascertained owing to imbecility or ignorance on the part of the patients, so that only in five cases was there anything like materially defective sight. In two of these cases lenses were opaque (cataractous). There was iritis in two others. There was nothing abnormal to be discovered on examination of the fundus, excepting for a few floating opacities in the vitreous. I may mention as an interesting fact that 22 of these patients were stated to be purely fish and rice eaters.

Thirty-three cases of lepra anæsthetica were examined, these having an average age of 42 years and an average duration of disease of 14 years. On comparing these ages with those of patients affected with lepra tuberosa, it will be noticed that both the average age and duration are much longer in the anæsthetic variety than in the tuberous. The oldest patient suffering from lepra anæsthetica was 87 years of age, having suffered from the disease for 45 years, and the youngest 10 years of age, the duration of illness being two years.

Whenever a patient was affected with paralysis of the facial nerve there was lagophthalmos, and owing to a neglect of this condition, several suffered from corneal complications, which had ultimately disorganised the eyes and produced complete loss of vision. When there was no lagophthalmos, generally the vision and the structures of the eye remained normal excepting for a certain amount of anæsthesia in the superciliary and glabellar regions, and in some cases in the conjunctiva. In some there were noticed in the adnexa macular patches which were anæsthetic and of a light brown colour.

There was an hereditary history in 3 out of 33 cases. The frontalis and corrugator supercilii muscles were paralysed in 5 cases; there was anæsthesia of the lids, of the conjunctiva, or of the cornea in 10 cases, lagophthalmos in 9, keratitis in 7, iritis in 1, cataract in 4, vision was better than $\frac{6}{12}$ and J. 4 in 20 cases.

In the anæsthetic variety the commonest complication was the insensitiveness of the parts about the eye and lagophthalmos, and as a secondary result keratitis, which in some of the cases had led to panophthalmitis and subsequent atrophy of the eyeball.

Here, too, it was noticed that 30 of the patients lived on a fish and rice diet.

It is interesting to note that most of the cases were of long duration, and the disease seemed to have done very little damage to the eyes or to other parts of the body. Mr. Jonathan Hutchinson, who visited this Asylum a few years ago, was greatly impressed with the slow progress of the cases and the little damage the disease seemed to have done to important structures.

It was unfortunate that a large number of the cases were diagnosed in the register as belonging to the mixed variety. There were 45 of these cases examined and I felt that most of

the cases of this class commenced as anæsthetic leprosy, and as time went on (often owing to neglect or to carelessness on the part of the patients) they gradually developed infiltrations and nodules and assumed a marked tubercular character.

I divided these cases into the two main varieties according to the predominant symptoms in the eyes at time of examination. Out of the 45 cases 30 showed a distinct tuberculous tendency and 15 were of the anæsthetic type.

In the latter group four gave an hereditary history. In 12 vision was greater than $\frac{6}{12}$ and J. 4. Out of the remaining three, two had cataracts and one suffered from iritis, which produced a diminution of vision. As in the purely anæsthetic type, here, too, the commonest complication was anæsthesia of eyebrows, conjunctiva, or cornea, and lagophthalmos.

As far as diminution in vision was concerned, the worst group was the tuberculous type of the mixed variety. As stated previously, these were advanced cases. In 13 vision was greater than $\frac{6}{12}$ and J. 4. As far as complications were concerned there were 15 cases that had nodular scleritic infiltrations which had secondarily involved the cornea. Twelve cases showed complications of the iris (iritis with resulting synechiæ). Four had anterior staphyloma. In almost all the cases of this group there was infiltration and thickening of the lids and complete or partial absence or degeneracy of the cilia.

My **conclusions** with reference to lepra ophthalmica in Ceylon are that the commonest specific lesions are found only in lepra tuberculosa, but even in this condition, the percentage of cases so affected is small. In only 23 out of the 50 examined for eye affections was there any specific pathological condition. In these cases the adnexa, superciliа, and cilia were affected from almost the very early stages of the disease; followed in a certain number of cases by an episcleritic infiltration which secondarily involved the cornea and iris. The amount of useful vision left even in the later stages of the disease is remarkable. There was no specific involvement of the fundus in any of the cases that were capable of examination. Fields and colour-vision were examined in a majority of the cases without detecting any abnormality. Tension was affected only secondarily. I have little doubt, even in the few cases that had a marked diminution of vision, that early surgical interference would have resulted in preventing, or at any rate in delaying, an involvement of the pupillary area, and thereby preserving useful vision for a longer period.

In lepra anæsthetica there were no primary lesions in the eyes; deterioration or loss of vision was due to a secondary traumatic affection of the cornea, owing to carelessness on the part of the patients in carrying out the instructions of the physicians or nurses to protect their eyes whenever there were signs of lagophthalmos.

The few cases of cataract seen in both varieties of lepra were,

comparatively, not above the average seen in this class of Cingalese.

I am grateful to the principal civil medical officer, Sir Allan Perry, for the opportunities afforded to me of making these observations, and to Dr. Heynsbergh, the Superintendent of the Asylum, who gave me great help in the study of the various cases.

Description of a few Cases seen at the Leper Asylum, Ceylon.

Case No. 1.—R. N., aged 36. Cultivator. Duration of disease, 7 years. No hereditary taint. Had primary hard chancre. Disease commenced with macular patches on the back. R. and L. frontalis and corrugator muscles active. Skin of forehead, glabella, and nose wrinkled and infiltrated with nodules. These nodules, of a dark brown colour; supercilia completely disappeared, and cilia very scanty. Eyebrows covered with nodular infiltrations; upper and lower lids thickened and infiltrated, more marked in the upper. R. ocular conjunctiva inflamed on the outer side, with slight purplish episcleral discolouration about 2 mm. from the sclero-corneal margin; there is commencing specific infiltration at this situation. Cornea clear excepting for an annular gerontoxon. V. $\frac{6}{12}$ and J.i. Tension normal. L. ocular and palpebral conjunctivæ congested. Specific episcleral nodule on lower and outer quadrant with haziness of cornea in this situation. Gerontoxon well-marked, small anterior polar cataract. V. $\frac{6}{60}$ and hand-movements. Tension normal.

Case No. 2.—C. A., aged 34. Lepra tuberculosa, duration of disease, 12 years. R. and L. slight infiltration of eyebrows. Frontalis muscles act fairly, but the corrugators feebly; supercilia and cilia are scanty. R. no lagophthalmos. Ocular conjunctiva injected. Sclerotic much thinned out and staphylomatous on the outer side, involving ciliary zone. Crescentic haziness of cornea on its outer eighth. Pupil fairly active, oval, and drawn towards the staphyloma. V. $\frac{6}{60}$ and J. 16 not improved. Tension —1. No history of any other eye affection before commencement of this disease. L. ocular conjunctiva injected. Corneal opacity involving almost the whole of the lower half. Sclerotic pale-blue, pericorneally. No staphyloma. Pupil hidden underneath opacity, being drawn downwards. V. hand-movements only. T.—1.

Case No. 3. J. P., aged 33. L. tuberculosa. Hereditary history. Duration of disease, 11 years. Commenced with anæsthesia of lower extremities. R. and L. frontalis and corrugator supercilii active. Eyebrows thickened and infiltrated. Supercilia and cilia scanty and atrophied. Eyelids thickened. R. circumcorneal injection. Palpebral conjunctivæ

inflamed and thickened. Slight muco-purulent discharge. Cornea infiltrated and opaque on outer third outside pupillary area. Anterior chamber shallow. Pupil 2 mm., immobile, white exudation in pupillary area. V. hand-movements. Tension normal. L. Conjunctivæ inflamed ; episcleral nodule on outer side. Cornea opaque and inflamed on outer half. Pupil, very sluggish, drawn towards the nodule. Iris congested. V. $\frac{6}{60}$ counts fingers. T. normal.

Case No. 4.—R., aged 49. L. tuberculosa. Duration of disease 22 years. R. and L. frontalis and corrugator fairly sound. Supercilia defective. No lagophthalmos. R. upper eyelids slightly thickened. Ocular conjunctivæ hyperæmic, especially lower and outer side. Sclerotic violet tinged, thinned and staphylomatous on inner side about 4 mm. from corneal margin. Cornea hazy lower third. Anterior chamber shallow. Pupil immobile with exudation, posterior synechiæ present. V. *nil*. L. : lower palpebral conjunctivæ congested, sclerotic thinned and staphylomatous about 4 mm. from corneal margin and over the middle of lower half. A circular opacity over pupillary area of cornea. Pupil immobile due to presence of old adhesions. V. *nil*.

Case No. 5.—J. D., aged 26. L. : tuberculosa. Duration of disease 17 years. Skin of the forehead has dusky-brown patches. R. and L. eyebrows infiltrated to a slight extent. Supercilia absent on outer halves and only a few lashes left in the inner halves. Cilia stunted and scanty, lagophthalmos, sensibility defective. R. : conjunctivæ injected. Sclerotic thinned and purplish on outer side. Cornea opaque with degenerate calcareous patches on lower half. Anterior chamber shallow. V. *nil*. Tension normal. L. : conjunctivæ hyperæmic. Complete opacity of cornea with superficial blood vessels running into it. V. no p.l. Tension normal. The corneal affection said to be secondary to lagophthalmos.

Case No. 6.—W. U. A., aged 27. Lepra tuberculosa. Duration of disease, 22 years. Hereditary history. Frontalis and corrugator muscles act with difficulty. R. and L. : eyebrows infiltrated and nodular. Scars of old ulcers on inner third of eyebrows. Glabella flattened. R. : upper lids slightly thickened. Conjunctivæ congested. Episclera hyperæmic. White thick opacity on outer half of cornea, nodular in character Pupil dragged towards nodule and covered by opacity. V. *nil*. L. : corneal opacity larger than in the R. Pupil drawn towards the outer side. V. *nil*.

Case No. 7.—F., aged 45. Lepra tuberculosa. Duration, 8 years. Commenced with numbness and loss of sensation in left fingers. R. and L. : frontal and corrugator muscles act with difficulty. Supercilia well marked. No infiltration. R. : eyelids thickened, especially the upper. Conjunctivæ congested and slightly anæsthetic. Pterygium on inner side ; no infiltration ;

external muscles active. Cornea sensitive; a small leucoma on lower and inner quadrant. Iris dark-brown and pupil active, 3 mm. Lens, vitreous, and fundus normal. V. $\frac{6}{12}$ not improved, and J. 1. Tension normal. L.: eyelids thickened, especially upper. Conjunctivæ congested, and there is lacrymation. Specific episcleritic infiltration on lower and outer side. Pterygium on inner side; external muscles active. Cornea opaque. Pupil drawn towards infiltration. Fundus not visible. V. *nil*. Tension normal.

CASE No. 8.—W. G. de A., aged 35. Lepra tuberculosa. Duration of disease 7 years. R. and L.: eyebrows thickened and infiltrated, supercilia scanty on outer side. R.: upper lid thickened. Cilia scanty and atrophied. Conjunctivæ congested. Specific episcleritic infiltration on outer side. Cornea opaque on outer third. Anterior chamber shallow. Pupil immobile with adhesions, and drawn towards the infiltration. V. $\frac{6}{36}$. T. +1? L.: Normal.

CASE No. 9.—S. A., aged 55. L. anæsthetica. Duration of disease $6\frac{1}{2}$ years. Commenced with a light-brown patch on left gluteal region. Various anæsthetic patches irregularly distributed over the face. Frontal and corrugator muscles active, and supercilia and cilia fairly developed. Condition of eyes normal, excepting for a mature cataract in R., and an incipient one in the L.

CASE No. 10.—S., aged 27. L. tuberculosa. Duration of disease 9 years. R. and L.: frontal and corrugator muscles act feebly. Eyebrows infiltrated. Supercilia on outer halves. Glabella flattened. R.: eyelids, especially the upper, much thickened. Conjunctiva congested, lacrymation present. Episcleritic nodular specific infiltration on the outer side. External muscles active. Cornea opaque on outer third over the side of the infiltration. Pupil sluggish, eccentric and drawn. V. $\frac{6}{36}$, and J. 6. L.: Conjunctivæ congested. Episcleritic nodular infiltration on lower and outer side with corneal opacity on a corresponding situation. External muscles active. Pupil irregular, and pulled to the lower and outer side, and half covered by the corneal opacity 5 mm. No synechiæ. V. $\frac{6}{36}$, and J. 4.

CASE No. 11.—A. A., aged 61. L. tuberculosa. Duration of disease 8 years. Commenced with loss of sensation in great toe followed by spontaneous blisters, which subsequently ulcerated. R. and L. Frontal and corrugator muscles active. Eyebrows infiltrated and nodular, supercilia absent on outer $\frac{3}{4}$. R. upper eyelids thickened. Conjunctivæ congested, slight pericorneal injection. External muscles active. Cornea hazy and sensitive. Anterior chamber shallow. Iris dark-brown. Pupil occluded. V. hand movements only. L. Conjunctivæ congested and sensitive. Episcleritic nodular infiltration on the lower and outer aspect. Cornea opaque at a corresponding situation. Pterygium on lower and inner side. Iris discoloured and pupil occluded. V. hand movements.

CASE No. 12.—M., aged 34. L. anæsthetica. Duration of disease 21 years. Disease commenced as light-brown patches on the chest with no loss of sensation; these patches became anæsthetic 2 years later. R. and L.: frontal and corrugator muscles act very freely. R: lagophthalmos 12 mm. Palpebral conjæ. anæsthetic. Cornea ulcerated ön lower half. Pupil 3 mm. V. $\frac{6}{9}$ and J.i. L: lagophthalmos 9 mm. Palpebral conjæ. congested. Corneal ulcers on lower half. Pupil 3 mm. V. $\frac{6}{6}$ and J.i.

CASE No. 13.—R. P. L. tuberculosa. R. and L.: tuberculous infiltration on superciliary regions and over the glabella. The tubercles are ulcerating. Upper and lower lids thickened. R.: episcleritic nodular infiltration (pericorneal). Cornea opaque on upper and lower fourths. Pupil irregular. Anterior polar cataract. L.: same condition as R. excepting for the absence of the cataracts.

CASE No. 14.—S. K. L. tuberculosa. R. and L.: episcleritic nodules extending to the cornea.

CASE No. 15.—J., aged 40. L. tuberculosa. Duration of disease 10 years. Family history healthy. Commenced with anæsthetic patches on the face; more recently tuberculous infiltrations showed themselves on nose, etc. R. and L.: no lagophthalmos. Frontal and corrugator muscles active. Eyebrows tuberculous. R.: upper eyelid thickened. Conjunctiva inflamed over infiltration Episcleritic nodular infiltration over the lower and outer part. External muscles active. Cornea opaque and infiltrated. Iris and pupil hidden under the opacity. V. *Nil.* L.: Conjunctiva inflamed over tuberculous patch which is situated in a corresponding position to the R. Cornea opaque and involved in its whole extent. V. *Nil.*

CASE No. 16.—L. A. H., aged 27. L. tuberculosa. Duration of disease 15 years. Commenced with a reddish-brown patch on the left cheek. R. and L.: frontal and corrugator muscles active. Eyebrows infiltrated. Glabella thickened. Supercilia almost absent. Lanugo. Eyebrows baggy and folding over the eyelids. R.: upper and lower lids thickened. Cilia degenerate. Conjunctivæ congested. External muscles active. Small episcleritic tuberculous infiltration on outer side of cornea. Fine corneal opacity. Anterior chamber shallow. Pupil active, 3 mm. V. $\frac{6}{5}$ and J. 1. L.: Upper and lower eyelids thickened. Conjunctiva congested. External muscles active. Small episcleritic infiltration on inner side of cornea. Fine corneal opacity. V. $\frac{6}{6}$ and J. 1.

CASE No. 17.—P. A., aged 36. L. anæsthetica. Duration of disease, 20 years. Hereditary history. R. and L.: frontal and corrugator muscles sluggish. R.: lagophthalmos 9 mm. Upper eyelids thickened and active. Ectropion of lower lid with epiphora. Ocular conjunctiva hyperæmic. Ulcer on lower quadrant of cornea. Pupil sluggish and irregular. L: lagophthalmos 11 mm., other conditions same as in the right.

CLINICAL MEMORANDA.

BILATERAL CONGENITAL TEMPORAL HAIR ISLETS: ACCESSORY EYEBROWS.

BY

H. WORK DODD, F.R.C.S.

SURGEON TO THE ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, LONDON, ETC.

The young lady, aged 19 years, who is the hostess of the above remarkable condition, consulted me in private about her vision in the early part of last year, and I then noticed the

peculiar and interesting abnormalities situated in her temporal regions, the like of which I had never seen before, and which I now believe to be unique.

As may be seen in the accompanying photographs, there is an islet of hair in each temporal region. This hair is about half an inch in length, lies flat to the head and is directed straight backwards. On the right side it is about half an inch from the eyebrow; on the left side the patch is a little further from the brow. The right islet is distinctly marked off and is more or less circular in shape, the hairs having the tendency to run into a cone. On the left side the hair tuft is not so pointed as that on the right, and also there are a few hairs irregularly placed between it and the brow; there is, as it were, a more irregular, unfinished look about this patch than the other. To the touch, the tufts resemble her eyebrows in softness. Though the eyebrows are well marked and perfect in form, one cannot help thinking that these patches are related to them developmentally. There are a few hairs situated between the eyebrows, but not sufficient to join them.

The mother says the patches have always been much as they are now. The patient is a well-grown blonde of good type physically, with plenty of hair. There are no other abnormalities about her and there is nothing in the family history bearing on the point.

The patches in no way resemble moles.

There is nothing in any way objectionable in the appearance of this condition—rather the reverse, and one is reminded of Addison's "Party Patches" (*The Spectator*, No. 81, June 2nd, 1711), where the ladies are said to have worn patches on one side or other of the forehead according to their being either Whig or Tory. Neutrals had the patches placed on both sides of the forehead. Troubles arose when moles or pimples were so situate as to cause a Tory to appear to patch on the Whig side, and, of course, the converse.

Feeling that the opinion of a skin specialist would be of great importance and aid, I asked my friend, Mr. George Pernet, to see the case, and he has kindly sent the accompanying notes for publication:—

Note by George Pernet.

ASSISTANT TO THE SKIN DEPARTMENT, UNIVERSITY COLLEGE HOSPITAL, LONDON.

Thanks to the courtesy of Mr. H. Work Dodd, I have had an opportunity of seeing the above case, on which he has kindly asked me my opinion. It is a very unusual condition, and, as far as I know, unique, familiar as I am with the literature relating to the hair. Although I have not been able to go into this particular point exhaustively, I have looked the matter up in some likely places without success.

The islets of hair are situated on normal skin; the condition is not one of the nature of hairy moles. In my opinion it is a developmental anomaly, which might be referred to as "aberrant eyebrows," for the hairs are like those of the eyebrows proper, and are the result, no doubt, of the cutting off of eyebrow tissue in the process of embryonic growth. Partial and asymmetrical ectopia supercilii would be a good provisional label.

I noticed also on examining the patient that there was a distinct tendency for the

eyebrows to join. Joined eyebrows, by-the-bye, are considered beautiful in Arabia, but the reverse in Denmark, Germany and Slav-land, where it is a sign of being a weirwolf or vampire. In Greece, also, it denotes a "Brukolak," or vampire.*

The case is one eminently suitable for treatment by electrolysis.**

ON THE USE OF STAPHYLOCOCCIC VACCINE IN THE TREATMENT OF HYPOPYON-ULCER.

BY

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No subject has attracted more attention during the last few years than the treatment of bacterial disease.

Much has been achieved by the injections of serums obtained from animals whose blood has been rendered immune to certain poisons by repeated injections of a weakened dose of the same poison.

The discoveries of Sir A. E. Wright with regard to the part played by the blood-serum in phagocytosis has added immensely to the zest and interest of hosts of active workers. He has shown the possibility of curing an infection by material obtained from the infecting virus and injected into the cellular tissues of the person infected.

The inoculation of an individual already infected with a vaccine is fundamentally different from the injection of an anti-toxin. Wright's definition of a vaccine is "any chemical substance which, when introduced into the body, causes there an elaboration of protective substances."

Darier and others have treated infected ulcers of the cornea by the injections of various anti-toxins, but I am not aware of any case in which a vaccine has been used.

In the November number of THE OPHTHALMOSCOPE there appeared by me notes of a case of hypopyon-ulcer treated successfully by subconjunctival injection.

This case was an acute one in a young healthy man. Since then I have treated two very bad (more or less chronic) cases in feeble old men, where subconjunctival treatment was not successful, but where the injection of dead vaccine proved most successful, as the following accounts, will, I think, show:

(1) W. P., a man, *æt.* 66, who had been in feeble health for two years and unable to work, was admitted on the 6th September, 1907, to the Carnarvonshire and Anglesey Infirmary,

* Richard Burton's *Thousand Nights and a Night*, Vol. I. p. 209.

**Since the above notes were sent in, I have had a lady under my care, in whom there was an island or tuft of hair just in front of the right ear only, the hairs corresponding to those of the scalp in texture, appearance, and quality—ectopia capillarum. The hairs were in healthy skin; no trace of mole.—G.P.

suffering from a large hypopyon-ulcer, extending over about a sixth of the cornea. The anterior chamber was about half-full of pus. The pus was let out, a subconjunctival injection of bicyanide of mercury given, boric lotion prescribed for bathing the eye, and dionin to be instilled in case of pain, which was sometimes complained of at night. This treatment was carried on for a few days without success; the anterior chamber had to be again emptied of the pus. Drops of quinine and atropine were now ordered for the eye, while tonics and nourishing food were persevered with. Subconjunctival injections were given every four or five days.

On the 7th of October the eye appeared to be much the same as when the patient was admitted; pus still formed and the ulcer was covered with a slough. I then decided to inject some staphylococcic vaccine, injecting a portion containing 250,000,000 dead cocci into the cellular tissue above the right scapula. On the 9th the formation of pus ceased and the ulcer healed rapidly.

The vaccine was obtained from a culture of pus on agar, taken from an acné pustule on the face of a patient of mine, prepared and standardised by the Clinical Research Association.

(2) E. E., *æt.* 66, who had been injured by a stone striking his right eye, and who had, in consequence, hypopyon-ulcer of the right cornea for a couple of weeks, was admitted to hospital on the 8th of October, 1907.

The eye looked very bad, the pus was escaping through a rupture in the cornea; there was no prolapse of the iris. The same treatment was ordered as in the former case. Similar subconjunctival injections of the bicyanide were given on October 11th, 12th, and 16th. On 18th October, no improvement having taken place, I injected 100,000,000 of the same vaccine as I had used in the former case.

The result was as markedly successful as in the previous case: for in three days pus had ceased to be formed, and the eye was clearing up. No further inoculation of vaccine was necessary.

These two cases appear to me to be quite clear as to cause and effect, especially in the first one, which had resisted all treatment for a month.

(3) In the following case the circumstances were different, for no subconjunctival injection was made, while the case was seen in the early stage of infection. L. W., *æt.* 46, a carter, called on me on 6th November, stating that three weeks previously he had received a blow on his eye from a chain, since which time his eye had been extremely painful, "watery," and unable to stand the light. Pain had increased very much during the last two days. On examination, the conjunctiva was found to be much congested, there was much lacrymation, while the dread of light was very great. At the upper margin of the cornea, a long narrow ulcer was found. Atropine was ordered to be instilled, and quinine given internally. He was seen on

the 7th, when the condition was the same as on the 6th. A dionin tabloid was placed in the eye for relief of pain. On the 9th it was evident that the ulcer had become infected, for a thin line of pus could be seen in the anterior chamber. He was at once given a small injection of the same vaccine that I had given in the previous case. On the 12th, 13th, and 14th, there was little change in the eye. On the 15th, however, there was no doubt that the quantity of pus was increasing. I gave him another injection of the same injection, and took him into hospital. There is no doubt Darier is right in his article on serum treatment, that good results are more likely to be obtained in hospital, where every detail of cleanliness is observed, than in private, where such a condition of affairs is not always obtainable, and, also, that local treatment should always be persevered with in addition to the injections.

The local treatment in this case consisted of irrigation with boric lotion, atropine, and a 15 per cent. solution of argyrol.

On 16th, 17th, and 18th November, there was little or no change, slightly more pus in the anterior chamber, but the patient complained on the 18th of less pain in his head. The temperature had ranged from 98·8° to 99° F. since he came into hospital. From this on to the 23rd the patient's condition remained much the same, the anterior chamber slowly filling with pus. I knew that the vaccine I had used had been kept for a long time, so on the 23rd I gave another injection of absolutely fresh vaccine.

On the 26th there was marked improvement in the patient: 1. The temperature became normal. 2. The pain in the head over the affected eye ceased. 3. The ulcer was healing rapidly, while the conjunctival congestion was subsiding.

From that day on to the present (8th December), he has not looked back; no more pus has been formed, while that in the anterior chamber is being rapidly absorbed. This case is instructive from the fact that the first two injections had only a very slight effect, the last a quick and distinct effect. There can be no doubt, I think, that the first vaccine used had become too old to call forth a very active countermove by the "host." Tonics, good feeding, and iodide of potash, are being given to build up the strength and promote absorption respectively.

Although I feel sure that a subconjunctival injection is capable of hastening absorption, I am anxious, in future cases, to employ vaccine inoculation alone.

Looking back at these three cases, and believing, as I do firmly, in the *rationale* of Wright's treatment of bacterial diseases generally, I shall approach any cases of hypopyon-ulcer which may come under my care in the future with a much greater degree of confidence than I have done in the past.

A MONOCULAR METHOD OF THE CORRECTION OF AMETROPIA.

BY

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It is the ophthalmic surgeon's aim to avoid, wherever possible, putting a patient to the trouble and expense of having to provide two pairs of spectacles for the correction of ametropia. Myopes, save in high degrees of the defect, and hypermetropes can do very well with one pair of lenses for all purposes until the presbyopic period is reached. Then, however, the trouble begins, the myope may find that he can read best without the lenses, while the hypermetrope finds that he cannot with the lenses accomplish, with comfort, reading and near work at all. Thus it is that in order to meet this difficulty, the bifocal lenses, first suggested by Franklin, have in a measure come into vogue. I say "in a measure," for it is only a small proportion of patients to whom these lenses appear to afford satisfaction. Hence it is always an experiment to prescribe Franklin lenses. In my experience, they are most frequently rejected, patients complaining that they simply could not use them. Such patients have instanced, for example, the confusion of vision, caused by the lenses, during the simple process of walking downstairs. Of course, it is easy to understand how this disturbing effect is caused. But that is just the point. Patients are generally indisposed to take the trouble to accustom themselves to a combination of lenses which demands of them an educative procedure, without which it is impossible for them to appreciate the practical utility of the optical aid provided. With these facts, then, in view, I have lately been prescribing —so far with satisfactory results—lenses on the "monocular" system; that is to say placing in one side of the frame the correcting lens for distant vision, and in the other the correcting lens for reading and near work. The convenience of such a method is manifold. A presbyopic hypermetrope, for example, can by this means visit a theatre, a picture gallery, or a cricket match at Lord's with comfort, so far as the correction of his ametropia is concerned. With the eye corrected for distant vision, he sees everything that he requires at a distance; with the eye corrected for near vision, he is able to read his programme, catalogue, or card of the match, as the case may be. The "eye is, *par excellence*, the organ of illusions," and thus it is that the patient finds that he can both see at a distance and read, with one pair of spectacles, without knowing which eye is being used for each purpose. The impression conveyed to his mind is that he has binocular vision for all purposes. This method of correction establishes, of course, a condition of artificial anisometropia,

which, however, has an exact parallel in the cases of anisometropia which naturally occur. Up to the present I have adopted this method in presbyopic patients, with a low degree of hypermetropia, and the results obtained having proved perfectly satisfactory, I shall now proceed to put it to the test in cases of myopia and astigmatism.

I do not claim for this method that it can supersede the present methods of correcting ordinary errors of refraction, but I submit that there are many occasions upon which it can prove of service without detriment to the patients. In all cases care should be taken to ensure that the lenses are properly centred.

THE CONNECTION BETWEEN INFLAMMATION OF THE PAROTID GLANDS AND IRITIS.

BY

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In the light of the papers on the ocular complications of mumps by Woodward and de Micas, recently analysed in THE OPHTHALMOSCOPE (September, 1907, p. 513), the two following cases may be of some interest.

CASE I.—Was a single woman, aged 26, who came to the Oxford Eye Hospital in March, 1906. Three weeks before attending, *i.e.*, second week in February, she had noticed dazzling in both eyes when out in the sun, and since then the sight had been misty and she had suffered from bad headaches. There had been no redness of the eyes. V. R. $\frac{6}{12}$, L. $\frac{6}{18}$.

In the right eye there were two iritic adhesions above and two below, and there was much keratitis punctata. In the left eye, also, there were numerous gross iritic adhesions and much keratitis punctata. No choroiditis could be seen in either eye.

On enquiry, she stated she had had "mumps" on the left side at the beginning of January, which had lasted till the third week in February. Her doctor, however, informed me that he had not diagnosed mumps; that there were no cases of mumps in the village, and that she had not been away from home. On seeing her again twelve days later, a hard, swollen gland was discovered above the angle of the right lower jaw. This slowly subsided. Her teeth were in a very bad state, practically all decayed and septic, but she refused to have them seen to. The iritis subsided under atropin, but at the beginning of this year it relapsed, and there was again fulness over the parotid on the left side, and a hard mass to be felt behind the ascending ramus of the jaw. After this the teeth were seen to, and the iritis and punctate keratitis cleared up, and the enlargement of the gland subsided.

CASE II.—This was a man, aged 65, who came to the hospital in January, 1907. Lens changes were found after dilatation of the pupil, and there was nothing else abnormal to be seen, so glasses were ordered for his presbyopia. Six weeks later, he attended again with the following history:—a few days after he had last come up, swellings appeared on each side of his face; these had been going down since, but a fortnight ago he had noticed that his sight was getting worse, and the right eye got bloodshot.

The iris of the right eye was much bound down, and there were some dots of pigment on anterior surface of lens-capsule. There were very hard irregular swellings of both parotid glands. No facial paralysis. Tongue, lips, and throat normal. Only a few teeth were left, he having lost all the rest: his mouth was not particularly septic. There were neither history nor signs of syphilis, but he was put on mercury and potassium iodid, and under atropin, the iritis quieted down, but the adhesion remained. The swelling of the parotids was gradually diminishing when last seen.

Remarks.—In both these cases the iritis distinctly appeared to follow the parotitis, and to subside with it. In the first case the septic state of the teeth was quite likely the cause of both conditions. In neither was the iritis of a very acute nature, although the first case had numerous dots of keratitis punctata. No definite cause could be discovered to account for the condition in the second case, as his mouth, for a hospital patient of his age, was fairly clean. Nor did he suffer from stomach or intestinal trouble. Syphilis cannot be absolutely excluded, of course, in the second case, but in both cases, I think, epidemic parotitis can be. But whatever the cause, the fact that iritis may occur with other forms of parotitis, besides the epidemic variety, seems worthy of recording in the columns of THE OPHTHALMOSCOPE.

REVIEW.

THE QUESTION OF THE SO-CALLED "FILTERING CICATRIX": A REVIEW OF SOME RECENT WORK ON THE SURGICAL TREATMENT OF GLAUCOMA.

BY

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The writer of the following remarks feels very like the boy who gets unwillingly pushed into a fight, or the unfortunate

interferer in a matrimonial quarrel. The title of the Review having been prescribed by the Editors, it is obvious to all who have read the articles of Herbert, Lagrange, and Henderson, that the use of the expression "So-called Filtering Cicatrix" is almost certain to act as "a red rag" to one of the two opposing sides. But that is the Editors' fault, if it is not their misfortune.

The fact of the matter is that for some time there has been no such "pretty quarrel" as that which, no doubt in a perfectly friendly and even Pickwickian sense, is being waged between Herbert and Lagrange and a majority of ophthalmic surgeons, on the one hand, and Thomson Henderson, on the other. When one person contradicts another pretty flatly, and each can marshal facts to prove that he is correct, and when, moreover, the statements are mutually destructive and contradictory, it is difficult to make out who is right, and a critical review such as the Editors suggest is out of the question on account of the danger indicated in the opening paragraph!

But the matter, unlike many causes of difference of opinion, is a serious one in reality. Nothing in ophthalmology could well be of greater importance than the determination whether or not an *iris-free* filtering cicatrix can be made in the corneo-scleral margin when operating for chronic glaucoma. Herbert maintains (1) not only that it can be done on purpose, but that in India it has actually resulted in many cases of cataract extraction, in which, of course, there was no desire to obtain such a cicatrix. It is necessary to draw a sharp distinction between cicatrices which are "cystoid," "fistulous" and "filtering." "The term 'filtering' should be restricted to smooth even scars, which evidently allow aqueous to pass through them, but which present no dark points which we can accept as fistulous openings" (Herbert *loc. cit.*). Cystoid cicatrices in which the iris is included, are not at present in question. Returning to Herbert's Indian cases, that writer has found that a filtering cicatrix may result when a large cataract incision is covered in by conjunctiva, even a number of years after the operation. 'The conjunctiva . . . . is œdematous as shown by the abnormal size and depth of the pits produced by light touches with the point of a probe. . . . Exaggeration of the œdema can be brought about by finger-pressure upon the globe. . . . The tension of these eyes is normal, or only very slightly sub-normal, but it may be lowered quickly by pressure upon the eye." Herbert then says that this "is exactly the condition which has been long desired but never attained with any approach to regularity in the treatment of glaucoma." He criticises the operation of Lagrange, because it seems to result rather in a subconjunctival fistula than in a filtering cicatrix, which fistula may be too wide and may—although it has hardly been proved—be "dangerous or objectionable." Herbert's operation, the *technique* of which, as given in his paper,

is decidedly difficult to follow, consists in isolating a single wedge of sclero-corneal tissue, leaving it however in position like "a disconnected graft of fibrous tissue." The iridectomy consists in a small peripheral button-hole to prevent incarceration of iris. Sufficient time has not elapsed since December, 1906, to allow Herbert to speak with great certainty of his results in 38 wedge operations performed in India and over 20 in this country ([6]), but the latter "promise very well so far, except that in a few cases fistulous tracks are forming instead of merely filtering scars." In some of the cases no iridectomy was done. It is obvious, however, that we must await Herbert's final results with patience.

Lagrange ([4]) does not draw the same sharp distinction between the different kinds of permeable cicatrix. "It is in vain," he says, "that one endeavours to obtain a filtering cicatrix by means of iridectomy and sclerotomy. On the one hand, when the operation is performed correctly, filtration does not take place, while, on the other, it occurs only when the surgeon, despite himself, has allowed the iris to become entangled in the wound." Lagrange describes his operation for the formation of what he calls a "filtering cicatrix," which, however, Herbert describes as a "subconjunctival fistula" (*vide supra*). The operation is a combined iridectomy and sclerectomy. It consists in: (1) scleral section with a Graefe knife, the posterior lip being "bevelled"; a large conjunctival flap is made; (2) excision with sharp curved scissors of a greater or smaller curved piece of the anterior scleral lip; (3) iridectomy; (4) replacement of the conjunctival flap. In the result the "cicatrix" varies in appearance, according to the intra-ocular tension, from a small scarcely raised dark line to a prominent button of œdema, resembling a cystoid cicatrix, but not in any single case really including any iris. Clinically, out of 27 cases watched for over six months there are 20 good results. In 12 the vision was considerably improved, and in eight it was maintained. In addition to these 27 cases, six cases have been watched "for some time." In these the tension has fallen to normal.

An endeavour has now been made to epitomise the methods and the claims of these two operators, Herbert and Lagrange. Each of them, by slightly different *technique* is aiming at the provision of free exit for the intra-ocular fluids by the establishment of a permeable path of some kind from the anterior chamber to the subconjunctival tissue. And they both assert that such a path is made by their operations, and that the good results in the eyes operated upon are dependent upon the filtration. In fact, Herbert, as above stated, has omitted the iridectomy in some cases, and usually makes only a peripheral buttonhole in the iris.

In July last we had thus two well-known operators each proclaiming that in all probability the correct treatment of chronic glaucoma was to make a filtering cicatrix, with or

without iridectomy. But then, at the Oxford Ophthalmological Congress (July, 1907), another oculist, who had been investigating the behaviour of operative wounds of the iris and corneo-scleral margin from the histological point of view, stepped into the arena, and having the courage of his convictions, moved a direct negative to the pleas of Herbert and Lagrange for the filtering cicatrix. This investigator, Dr. Thomson Henderson, of Nottingham, while agreeing that glaucoma (all forms of it, according to him) is caused by obstruction to the outflow from the eye, denies absolutely that any *permanent* filtering cicatrix in corneal or scleral tissue can be obtained, and asserts that the cure of glaucoma is due to the iridectomy and to the iridectomy alone (2). Henderson's convictions are so strong, and his arguments so clearly set forth in the subsequent papers which he has published (2) (3) (5) that we may epitomise them here. There are two main histological facts upon which his argument depends. The first is, that a cut iris does not cicatrize, and that the appearance of an iris-stump years after operation is as if the operation had been performed *post-mortem*. The second principal fact is, that in scleral wounds there is first of all a down-growth of vascular subconjunctival tissue, then a sealing of the inner margin of the incision by the posterior endothelium, and, finally, after six or nine months, complete cicatrization, obliteration of capillaries, formation of a homogeneous membrane by the endothelium, and thereby union of the severed ends of Descemet's membrane (5, page 704). "Once the growth of endothelium is complete, the wound is no more a filtering cicatrix, but is shut off from the anterior chamber by a layer of new-formed endothelial cells which proceed to lay down a new homogeneous membrane between the cut surfaces of Descemet's membrane. It is this endothelium that precludes all possibility of a permanent filtering cicatrix following any operative incision however devised."

It would occupy too much space to go into Henderson's interesting views upon sclerosis of the pectinate ligament as the cause of the obstructed outflow in glaucoma, and upon the pathogenesis of glaucoma in general. This review is concerned with the question of the "filtering cicatrix," and it will be sufficient to quote his final paragraph (5). "I would emphasize the fact that the success of operation in glaucoma does not lie in a 'filtering' wound, but in the accompanying iridectomy. The reason of the beneficial and curative action of iridectomy in glaucoma is accounted for by the fact that the cut iris surface forming the base and pillars of the coloboma never undergoes any reparative process, but always remains as a raw, open wound, as when first severed, so acting as a permanently open filtering area through which the aqueous can drain away. The efficacy of this drainage area depends upon the operation being done before atrophy of the iris stroma has progressed too far."

We have, therefore, a clear issue before us which should certainly be capable of settlement. On the one hand, clinical observers who state that the iris-free filtering cicatrix is a fact. In this direction Herbert's cataract cases would seem very convincing. On the other hand, at least one histo-pathological observer who asserts that the filtering cicatrix is impossible *after healing is complete*. In this direction Herbert's and Lagrange's glaucoma results strike one as hardly yet proved. Colonel Herbert's letter in THE OPHTHALMOSCOPE (6) protesting against Henderson's "decision" that he and Lagrange are mistaken because he (Henderson) has not seen the cases, does not seem to advance matters, since, admittedly, the recently operated glaucoma cases require the proof which only time can give.

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TRANSLATION.

INJURIES TO THE EYES OF THE CHILD DURING LABOUR.*

(*Concluded.*)

BY

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(*Translated by* ROSA FORD, M.B.Lond.)

III. (*a*) Complete protrusion or avulsion of the globe from the orbit in 19 cases, among which was one (Hofmann) in which the separated eyeball slipped, during the birth, into the fingers of the operator, and two (Maygrier and Zangarol) in which the eyeball was found after birth in the child's linen.

(*b*) More or less great exophthalmos (without complete protrusion) in 13 cases.

* *Beiträge zur Augenheilkunde*; Festchrift Julius Hirschberg, Leipzig, 1905.

IV. Eye muscle paralyses in 17 cases.

V. (*a*) Flattening due to crushing of the globe, in three cases.

(*b*) Corneal opacity (corneal tear) in 31 cases.

(*c*) Bleeding into the eye chambers, and similar lesions in 15 cases.

(*d*) Rupture of the choroid in one case.

(*e*) Retinal hæmorrhage and retinal œdema in three cases.

(*f*) Atrophy of the optic nerve in five cases.

(*g*) Infantile glaucoma in one case.

(*h*) Traumatic cataract in one case.

(*i*) Purulent inflammation of the eyeball, phthisis bulbi, microphthalmos in five cases.

Of great importance is the question as to the relative frequency of eye injuries in different kinds of labours. In this respect extraordinarily great differences are apparent.

From the above collection of published cases arises first the important inference, namely, that eye injuries seldom occur in infants, who are born with an after-coming head. This fact has up to now remained quite unemphasized. Only in Truc's[1] work did I find the remark "*les manœuvres de la version semblent pour les yeux à peu près inoffensives.*" Obviously the question of which Truc speaks here is not that of the consequences of the turning, but of the extraction, *i.e.*, the delivery of the after-coming head; since that eye injuries should originate through turning *per se*, one may *a priori* consider almost excluded.

Among all the cases which I was able to collect, only one occurs in which turning and extraction (that of Danyan) was performed, and only two in which the child was born with the breech presenting (one of Dittrich and one from v. Hofmann).

In all other observations—so far as details about the course of labour were to hand—the children came into the world head first.

Among the cases of this last group are—which is specially noteworthy—some in which the delivery was accomplished spontaneously, with the usual vertex presentation. In some other spontaneous deliveries there was a face or a brow presentation.

The number of instances in which the child came spontaneously into the world is, on the whole, however, only a very small one.

It is after forceps deliveries in a by far preponderating majority (93 cases out of 108 in which details of labour are given) that eye injuries originate.

Among the 93 forceps cases are only five in which it is expressly stated that a normal pelvis was in question, 49 times details are absent on this point; in the other 39 cases the pelvis

[1] Truc. *Loc. cit.*

was contracted. Doubtless, then, the narrow pelvis plays an extraordinarily important *rôle* in the origin of these injuries.

Among the 39 cases of narrow pelvis, 22 times the particular kind of pelvic contraction cannot be gathered from the reports; in eight cases there were, according to the particulars, with certainty or probability, generally contracted pelves; in nine cases flattened pelves. If one takes into consideration here the relative rarity of contracted pelvis[1], it appears that in forceps deliveries the generally contracted pelves predispose to eye injuries in a greater measure than the flat ones.

As to the position of the head on application of the forceps, in 27 cases the high operation was performed; 61 times the information does not permit of a conclusion as to where the head was at the beginning of the operation; five times it is stated that the head had already entered the pelvic brim.

In the great majority of the cases in which forceps were applied, the head was in the usual vertex position; in some instances a frontal, brow, or face presentation existed.

On the ground of the above facts one must come to the conclusion that eye injuries undoubtedly occur occasionally in comparatively simple instrumental deliveries, the head having already reached a favourable position; in by far the larger number of cases, however, such accidents occur only when difficult operations, with the head still high, have been performed, especially when the pelvis is contracted.

We now come to the question, how these great differences in the frequency of eye injuries, in the different kinds of labour, are to be explained. In connection with this is the question, as to what circumstances cause these traumas in the course of labour.

We have first to discover how it is that eye injuries are almost exclusively found in children who come into the world head first. The cause for this is, in my view, to be found in the following facts:

With first-coming head, either according to its presentation, or to the configuration of the head, or to the mechanism of labour in the different shapes of pelves, or to the different ways in which forceps have grasped the head, the head of the child may be compressed in the most various diameters by the pelvis or the forceps, and thereby be considerably damaged in the most various parts.

In labour with an after-coming head, on the contrary (be it in primary pelvic presentation, or after timely turning), the head enters the pelvis in its original shape, *i.e.*, unmoulded.

[1] According to Ludwig and Savor (*Die Geburt bei engem Becken*; Wien, 1897) among, 17,129 births, 43·6 per cent. observations were on simply flat pelves, 26·6 per cent. on ricketty flat, 16·1 on generally (moderately) contracted, and 10·6 per cent. on generally contracted and flat pelves.

The labour mechanism is indeed, as Litzmann[1] has taught, with an after-coming head, even as in fore-coming, dependent on the form of the pelvis. In any case, however, the head passes with its fronto-occipital diameter in the transverse or oblique diameter of the pelvic inlet. The pressure of the promontory, which, of course, in a narrow pelvis is the chief consideration, will then meet the head chiefly in its transverse diameter.

The unmoulded broad occiput is, under such circumstances, much exposed to the danger of impression or fracture, while the much smaller sinciput is only slightly so.

It is consequently to be expected that in labours completed as pelvic presentations, fractures and impressions of the skull bones should have their site or centre preponderatingly in the parietal or occipital bone, and only exceptionally in the frontal bone. On the other hand, it may be supposed that in labours in which the head presents throughout, especially in instrumental deliveries, the frontal bone possesses no such position of exception or, at least, not to the same degree.

A proof that the facts stand in agreement with these expectations, I found, when I compared two collections of statistics of birth injuries of children with one another, of which the one was published by Carl Ruge[2], and the other by Lomer.[3] The works of these two authors are peculiarly adapted for comparison owing to the fact that both are based on material from one and the same Institution, *viz.*, the Berlin University Women's Hospital.

Ruge reported injuries which were discovered in the autopsies of more than 60 children born in pelvic presentation. He found in these, among injuries of the skull bones:

Fractures, fissures, or impressions on the os parietale, 3.

Fractures of the os occipitale, 2.

Separations of the epiphyses of the os occipitale, 8; and fissures of the os frontis only, 1. In this one case of fissure of the frontal bone, the case was not that of a normal child, but of a hydrocephalic.

On the other hand, Lomer found among 27 fractures discovered in children after instrumental deliveries:

Fractures of the os parietale, 5 times.

Ruptures of the sagittal suture, 6 times.

Ruptures of the lambdoid suture, 4 times

Separation of the squama ossis occipitalis, 5 times; and

Fractures of the os frontis, 10 times, of which four involved the pars orbitalis.

I consider, then, from these reasons, that the sinciput, as a

[1] Litzmann, "Ueber den Einfluss der einzelnen Formen des engen Beckens auf die Geburt." *Volkmanns Samml. klin. Vorträge*, Nr. 74. *Gynäk.*, Nr. 24.

[2] Carl Ruge, "Ueber die Verletzung des Kindes durch die Extraction, u.s.w." *Zeitschrift für Geburtsh. und Frauenkrankh.*, Bd. I., 1876.

[3] Lomer, "Ueber Fracturen des kindlichen Schädels durch die Zange." *Zeitschrift für Geburtsh. und Gynäk.*, Bd. X, 1884.

whole, is only slightly endangered by extraction in pelvic presentations, and that for the same reasons, injuries to the eye occur only rarely with an after-coming head. The eyeball itself is, naturally, well protected by its position in the orbit.

In fact, I have not found a single case in literature in which a child born with the pelvis presenting is reported to have had an injury to the eyeball. In the three labours quoted in the table with after-coming head, the injury is one of fracture of the orbital roof only; of these, one, that of Danyau, was associated with swelling and discolouration of the eyelids.

We turn now to discuss the causes of eye injuries in labours which continue to the end in head presentation; and in the first place spontaneous labours.

It must be mentioned that in face presentations, severe injuries of the eye may be produced by unsuitable examination —that is to say through diagnostic errors. In two cases (Bock and de Wecker), the obstetrician mistook a face for a breech presentation and with the idea that his finger was in the anus, bored out the eye from the orbit.

The eye injuries which occur in children who have come spontaneously into the world are somewhat difficult to explain.

Sidler-Huguenin takes the view that with a narrow pelvis the cranial cavities may be so compressed that the eye no longer finds sufficient room in the orbit.

If in a spontaneous birth such severe injuries appear as in the case of Hofmann[1] in which the right eye was almost completely torn out, and lay on the middle of the right cheek of the child, then it is clear that some very powerful force must have come into play.

Hofmann believes that in his case the accident was produced by unusually strong pains suddenly forcing the head through the narrow passage. In fact, the idea that in such cases an abnormal activity of the pains may be of some significance as regards origin cannot be dismissed from the argument. It is certainly remarkable that, as Lomer[2] points out, Hofmann's patient had taken ergot during labour. As Veit[3] has shown, there may be severe injuries of the child's skull, no other abnormal conditions co-existing, solely as the result of an altered character of the pains induced by ergot.

With regard to the ætiological importance of the narrow pelvis, it may be taken, from a theoretical standpoint, that in regularly formed narrow pelves, it is the generally contracted which most readily gives occasion for eye injuries in spontaneous births, for if in this form of pelvis, pressure marks and impressions occur on the head, they involve, according to Olshausen[4], mostly

[1]See the table.

[2]Lomer, *loc. cit.*

[3]Veit, "Schädelfissur bei normalen Becken durch Darreichung von Secale cornutum." *Zeitschr. f. Geburtsch.*, Bd. III, 1878.

[4]Olshausen, *Lehrbuch*, S. 537.

the frontal bone (posteriorly). In irregularly formed pelves, bony prominences and similar deformities may produce injuries.

With the sinciput low down, the globe may, according to Ahlfeld[1], be extruded by pressure on the temporal part of the orbit.

Finally, cerebral hæmorrhages sometimes occur from some cause, probably even in spontaneous deliveries, and may then, as Sidler-Huguenin[2] thinks, be the direct cause of eye muscle paralysis.

All these causes, however, which occasionally lead to eye injuries in spontaneous births, have a small significance only as compared with the forceps in the ætiology of the traumas.

There can be hardly a doubt that in those cases of instrumental delivery in which eye injuries have occurred, the traumatism is, as a rule, produced directly or indirectly by the forceps themselves. Only exceptionally, as in the case already mentioned of Hofmann, where, in one and the same woman, the globe was torn out of the orbit, once in the course of spontaneous delivery, and again during a quite easy forceps extraction, must one suppose that the forceps played no part at all in its origin. If it be not the forceps themselves to which one must generally ascribe the blame of eye injuries, but if the cause be frequently only the narrow pelvis as such, then such injuries would have occurred much more frequently, in proportion to forceps deliveries, in spontaneous births with a narrow pelvis than is the case.

The action of the forceps in the production of eye injuries may be (*a*) direct, or (*b*) indirect.

(*a*) A direct pressure of the forceps on the eye, with its harmful results as regards the orbit, the soft parts surrounding the eye, and the globe itself, is especially to be feared when the forceps are applied to the head above the brim. In this position of the head the skull will be grasped, as a rule, exactly or almost exactly in the fronto-occipital diameter, and, consequently, the eye may easily come to lie directly beneath the forceps blade.

The danger of a direct lateral compression of the orbit with the forceps presents itself when forceps are used in brow presentation. Cramer[3], in particular, in reporting his case[4], has drawn attention to the fact, that in this situation of the head, when the forceps-blades lie on either side of the skull, the orbit is endangered in a particularly typical manner.

Cramer remarks: "Sutura squamosa, antero-lateral fontanelle, and the suture between the malar and frontal bones form a continuous yielding line of suture. If now the sharp border of

[1]Ahlfeld, *Lehrb. d Geburtsh.*, 1898. S. 401.
[2]Sidler-Huguenin, *loc cit.*
[3]Cramer, *loc cit.*, *Centralbl. f. Gynäk.*, 1899.
[4]See the table.

the forceps blade comes to lie just in this line, then a deep pressure-furrow ensues. Now, it is easy to understand, that under these conditions, with too great force, the temporal part of the arcus orbitalis may be broken in. Obviously the globe will by this mechanism be very much compressed laterally."

(*b*) Indirectly, the forceps may lead to eye injuries: first, in that they cause fractures or impressions in neighbouring skull-bones, which extend to the orbit, and eventually affect the eye itself; secondly, through production of intra-cranial or intra-orbital hæmorrhages; and, finally, possibly also through an increase in the intra-cranial pressure, due to the compression of the skull (Sidler-Huguenin).

Indirect, like direct, pressure comes into play chiefly when the head is grasped in the fronto-occipital diameter, especially when rotation forward of the head in the forceps fails to occur during the extraction.

That eye injuries in forceps deliveries, as above mentioned, occur particularly often in narrow pelves, and, consequently, that a narrow pelvis undoubtedly considerably enhances the dangers of forceps for the eyes, needs no further proof. It is just in cases with a narrow pelvis, that the forceps are so often applied to the head above the brim, in the fronto-occipital diameter, which, as we have seen, is especially dangerous as regards the eye.

In this situation, as is familiar in the teaching about narrow pelves, and needs no further discussion now, fractures of the skull and other lesions of the head occur particularly easily on use of the forceps, and especially those injuries which involve the organ of sight.

We have now to settle how far and in what way one may avoid eye injuries in labours, if that be possible.

In a technical respect, one cannot get away from the rule, to lay the forceps on the head in the pelvic brim, in the fronto-occipital diameter of the skull, in spite of the dangers to the eye which present themselves in just this position of the blades.

It is commendable, however, in such a case, to apply the forceps under the guidance of the half-hand, in order to control the position of the blades as exactly as possible, and, if it can possibly be managed, to avoid applying the forceps directly over the eye.

If the head, in the forceps, enters the pelvis in the transverse position without rotating, then it is advisable, with special regard to the eyes, to take off the forceps, and to apply them again obliquely.

If it is a matter of a deep transverse position, then it is expedient, as well for other reasons, as more particularly in order to avoid the pressure on the eyes, to apply the instruments in the oblique diameter.

General principles about the direction of labour naturally cannot be entered into here; since such principles are not drawn

from the one single fact that eye injuries in these or those labours occur more or less frequently. General therapeutic principles must be based, obviously, much rather on the observation of all the factors which have a bearing on the course of labour.

Meanwhile, I think that I may point out this, namely, that birth injuries of the eye as as individual factor, deserve in the future at all events, much greater attention in obstetrics than they have hitherto received. The fact that these injuries occur almost exclusively in births which continue throughout in head presentation, but in these labours by no means so seldom as it would appear, can for instance in the teaching about the narrow pelvis, certainly not be regarded as unessential.

I would also not leave unmentioned, that from the cases of eye injuries here collected, the opinion will once again arise, that forceps should never be used in a narrow pelvis, and certainly not when the head is above the brim in a narrow pelvis, except on urgent indications[1].

When Olshausen[2] says: "The forceps are as suitable for the narrow pelvis in general as the fist is for the eye," the above cases show that one can take this saying literally.

Finally, we have to ask ourselves how far is the medical man responsible for the occurrence of an eye injury to the baby during confinement.

I disregard here the cases in which injuries of the worst kind have happened in face presentations through examinations under a mistaken diagnosis.

Of special importance is the view taken of the eye injuries which occur in forceps operations. In this respect, it is, in the first place, significant that, as we have seen, eye injuries of the worst description also sometimes happen in perfectly spontaneous labours. Of importance for the judgment is, further, that we do not possess a certain means of absolutely avoiding eye injuries in forceps deliveries. Such traumas may, therefore, also occur to the most skilful. As a classical example of this will always remain the case published by Lomer,[3] in which the latter specially emphasized the fact that there was no question of an unskilful application of the forceps, since Herr Geheimrat Schroeder himself applied them.

Hence, it follows that, either from the fact itself that an eye injury occured at a birth, or from the kind of severity of this injury in itself, apart from further details, a mistaken method of treatment on the part of the obstetrician is not to be inferred.

In every case the question must, in the first place, turn much rather on the circumstances of the individual case, as to whether

[1] Sidler-Huguenin. *Loc. cit.*
[1] *Cf.* Bruno Wolff, *Archiv f. Gynäk.*, Bd. 69, S. 265ff.
[2] Olshausen, *Lehrbuch*, S. 530.
[3] Lomer, *loc. cit.*

the application of forceps, under the given conditions, was justifiable or not.

Preponderatingly, or solely on the ground of the last inquiry, should, as I think, birth injuries of the eye be judged from a forensic point of view.

In conclusion, I would make the following further remarks:—

Our knowledge of the harmful actions which spontaneous labours and the different obstetric operations may exert on the child are still limited almost entirely to the acquaintance with those pathological conditions which appear in direct connection with birth, or are noticed very soon after it. It must, however, undoubtedly be accepted, that, as with regard to the organ of sight, so also in other parts, especially of the nervous system, the child is very frequently exposed in certain kinds of labour to such injuries which only become distinctly recognisable in later life. I refer in this respect especially to the above-mentioned work of Finkelstein[1], and to the details which Knapp[2] gives, in his recently published and interesting book, about the results of asphyxia in children apparently still-born, which only appeared in later life. Undoubtedly, exact knowledge of these later results of birth injuries, and, above all, as to which labours are chiefly dangerous, is of the greatest importance to the obstetrician. It is, for example, not excluded, that, with an improvement in the prognosis of Cæsarian section or of symphysiotomy, one will take into account, in considering the indications for these operations, not only the direct danger to life which certain forms and degrees of narrow pelvis present for the child, but also those dangers which deliveries through the natural, but contracted, birth canal may bring with them on the later future of the children born alive.

We have here, then, still a wide area of inquiry before us, an area, that doubtless deserves great theoretical and practical interest. Full explanation of these questions will be possible only through the common work of the obstetrican and of other observers. To the elucidation of a single chapter of this great inquiry the foregoing work is but a small addition.

[THE END.]

[1] Finkelstein, *loc. cit.*

[2] Knapp, "Der Scheintod der Neugeborenen." *II Klin. Teil.* Wien. & Leipz., 1904. S. 76 ff.

CURRENT LITERATURE.

NOTE.—Communications of which the titles only are given either contain nothing new or else do not lend themselves to abstract.

I.—JUVENILE TABES.

Cantonnet, A.—The ocular manifestations of Juvenile Tabes. (Les manifestations oculaires du Tabes Juvénile.) *Archives d'Ophtalmologie*, novembre, 1907.

Cantonnet's communication on the ocular manifestations of juvenile tabes, which occupies twenty-two pages of the *Archives*, can only be characterised as an important addition to our knowledge of a rare and interesting condition.

The author first describes a personal observation in a farm-hand of fifteen years, whose mother, after she had borne two healthy children, had contracted syphilis from a nursling. The mishap in question was succeeded by two miscarriages, by a baby who lived fifteen days only, then by the birth of the patient, and, lastly, by the birth of a healthy girl. The mother was tabetic. As regards Cantonnet's patient, the signs of tabes included abolition of the knee- and ankle-jerks, Romberg's sign, occasional diurnal incontinence of urine, "lightning pains," diplopia, ataxy of the oculo-motor muscles, and unequal pupils, together with the Argyll Robertson phenomenon. The sight and visual fields were normal. As personal evidence of syphilis the lad presented frontal "bosses," arched palate, exostosis of the feet, and a suggestion of infantilism.

The communication ends with some conclusions based upon an analysis of 89 cases of juvenile tabes collected by Cantonnet from the literature. These may be summarized as follows:

Juvenile tabes, although a rare affection, is not absolutely exceptional. The part played by syphilis in its production is as considerable as in adult tabes. In 57·1 per cent. of the cases there was certain evidence of inherited and in 8·5 per cent. of syphilis acquired during the first years of life. Direct heredity is not common. In 15·30 per cent. of the cases analysed by Cantonnet, one of the parents was tabetic, and in 12 per cent. one was affected with general paralysis. Juvenile tabes, which, on the average, begins at 15 years of age, affects females in 62·6 per cent. as against 37·3 per cent. in males, a striking contrast to its sex-incidence in later life. In children the disease commences with "lightning pains" in 25·2 per cent. of the cases, with bladder trouble in 18 per cent., and with amblyopia in 14 per cent. Ataxy occurs in 32 per cent. of the juvenile cases, as compared with 65 per cent. of the adult cases. Tabetic arthropathies exist in 11 per cent. of the former, and in from 4

to 5 per cent of the latter class (Erb). **Ocular disturbances.**—The pupillary disturbances include anisocoria and the Argyll Robertson phenomenon. Rochon-Duvigneaud and Heitz (*Archives générales de médicine*, 1903, No. 27, p. 1675) in adults found in 41 per cent. of the cases a diminution or suppression of the pupillary reflex, associated with mydriasis, a condition to which they applied the name of "complicated Argyll Robertson sign." Cantonnet has found that the phenomenon existed, on one or both sides, in 13 per cent. of the cases of juvenile tabes. In adult tabes oculo-motor paralysis has been estimated to occur in from 39 per cent. (Moeli) to 80 per cent. (Gowers) of the patients. In children, however, the figure is placed by Cantonnet as low as 18·6 per cent. In several of the cases collected by Cantonnet nystagmus, secondary to complete amaurosis, was mentioned. On the other hand, the series did not include a true tabetic nystagmus independent of amaurosis, although the existence of such a condition in adult cases has been admitted by Erb, Leyden, Goldscheider, and Curschmann. Some authors do not regard the nystagmus as nystagmus pure and simple, but rather as a defect in ocular equilibrium analogous to ataxy of the extremities. Apart from obvious ocular ataxy, there may exist a latent variety, comparable with the disturbances of orientation brought out by closure of the eyelids (Romberg's sign). Miraillié and Desclaux (*Société de Neurologie*, November, 1903) have reported several cases where diplopia could be elicited in patients who were affected with latent ocular ataxy, by the simple device of getting them to "fix" an object three or four metres distant, a pasteboard tube being placed in front of one eye. In Cantonnet's own case this symptom existed, although the extremities were not ataxic. The ocular lesions of hereditary syphilis were represented in Cantonnet's series seven times by choroido-retinitis and five times by parenchymatous keratitis—that is to say, in a total of 13·90 per cent. of the cases. Optic atrophy, complete or incomplete, occurs with great frequency in juvenile tabes. In the present series it was noted in 43·9 per cent. of the cases. According to Panas (*Traité des Maladies des Yeux*, I, p. 707), ocular paralysis occurs in 35 per cent. of the cases of tabetic amaurosis. In children, however, this is far from being the case. Thus, in Cantonnet's series, 11 per cent. of the cases showed ocular palsy without amaurosis; 37·5 per cent. amaurosis without paralysis; and only 6·7 per cent. a combination of the two conditions. Among 40 cases of optic atrophy, Cantonnet found in 70·5 per cent. amaurosis without ataxy, 20 per cent. with slight ataxy, and 9·5 per cent. with marked ataxy. **Prognosis.**—In juvenile tabes the prognosis as regards sight is bad (43·9 per cent. optic atrophy). On the contrary, as regards life, it appears to be

relatively good, since among 12 patients, whose cases were followed for 10 to 20 years after the beginning of the affection, there was not a single death. It must not be forgotten, however, that, as in the adult, general paralysis may supervene in juvenile tabes. Indeed, four such cases are included among Cantonnet's collected cases. SYDNEY STEPHENSON.

II.—PSYCHONEUROSES IN OPHTHALMOLOGY.

Bartels, Martin.—Some observations and experiences on the part played by the so-called neuroses, especially the psychoneuroses, hysteria and neurasthenia, in ophthalmology. (Einige Bemerkungen und Erfahrungen ueber die Rolle der sogenannten Neurosen, speziell der Psychoneurosen, Hysterie und Neurasthenie in der Augenheilkunde.) *Zeitschrift für Augenheilkunde*, November and December, 1907.

Bartels (Strassburg) classes as hysteria and neurasthenia those neuroses in which no organic lesion is present and which are amenable to psychic influences, such as suggestion. If we keep this definition in view we are not likely to believe that true epileptic seizures can be cured by the correction of an error of refraction. If such a result be obtained, we may be certain that the disease was not epilepsy but hysteria. Hysteria cannot give rise to an organic change in the optic nerve, as some authors have stated. The cases where psychic influences in the course of hysteria have given rise to peripheral organic changes are rare; in the eye they are practically unknown.

In investigating a case of hysteria, what is discovered depends largely upon the mental attitude of the surgeon. Auto-suggestion plays a prominent part; he who expects to find concentric contraction of the fields, will find it, and *vice versâ*. In some forms of psychic hyperæsthesia a very large field can be obtained. The mere size of the field has no diagnostic value, but the fact that the investigator can cause it to vary in size by suggestion is characteristic of hysteria. One must beware of regarding these patients as guilty of wilful deceit and simulation; but, on the other hand, one must not consider every sign and symptom in an hysterical person as a psychic phenomenon: a dilated pupil, for example, is often caused by the deliberate instillation of atropine.

The number of psychoneurotics met with in private practice is much greater than is often imagined. They must be treated by psychic methods. They are often very difficult to cure, sometimes because energetic local treatment has so concentrated attention upon the affection that pure psychotherapy is powerless.

It is often difficult to decide whether the case is purely functional or whether there is real organic disease. This is especially the case with regard to disseminated sclerosis. Very often the apparently hysterical condition is but the herald of an organic affection. General paralysis and cerebral arterial sclerosis are apt to be overlooked. The vast majority of ocular psychoneuroses can be classed as hysteria or neurasthenia; it is almost impossible to differentiate the two. Abnormal liability to fatigue is the chief characteristic of neurasthenia—abnormal excitability, of hysteria. The proportion of males to females in hysteria is 1—5 or more, in neurasthenia 2—1. Bartels has not been able to satisfy himself that sexual excess is a cause of hysteria or neurasthenia; the two may co-exist, but probably the nervous condition determines the excess.

In treating hysterical eye disease, every effort should be made to withdraw the patient's thoughts from his eyes. General treatment is more important than local. But the eye must not be neglected; it must be most carefully examined, and the patient then assured that it is perfectly sound. Very often a change of scene is necessary; for example, children who blink are often cured at once if admitted to hospital. In neurasthenia it is most important to combat the fatigue. Rest, complete both for the mind and body, and, above all, for the eyes, is essential. The surgeon must do his best by his manner to gain the confidence of his patient, and to convince him that there is no organic disease.

As regards definite symptoms, there may be present all the symptoms of conjunctivitis, but none of the signs. The symptoms are all exaggerated. Great pain may be complained of, and often in a region far removed from the eye—for example, neuralgia of the occipital nerve or of the brachial plexus. The subjective disorders of vision are innumerable: flames shooting before the eyes, snake-like pictures, etc., are common. Sensations of colour may be due to the widely-dilated pupil common in these subjects of hysteria. The cause of hysterical amblyopia is certainly a central one, and not, as some maintain, alterations in the optic nerve. Such a condition often disappears under pure psychic treatment, a proof of its functional nature. Bartels regards accommodation-spasm as often of pure hysterical origin.

The paper is very long and discursive, and hardly lends itself to abstraction. It should be read in the original by those interested in the subject. T. HARRISON BUTLER.

III.—DIAGNOSTIC VALUE OF PHYSOSTIGMINE IN ANOMALIES OF THE PUPIL-REFLEX.

Krusius, F. F.—On the diagnostic value of eserine in anomalies of the pupil-reflex. (Zur diagnostischen Verwertung des Eserins bei Pupillenstörungen.) *Zeitschrift für Augenheilkunde*, November, 1907.

Krusius (Marburg) first observes that the experiments of P. Schultz have shown that eserine produces myosis by a direct stimulation of the nerve-endings in the sphincter muscle. It is, therefore, conceivable that the action of eserine may enable us to localise the position of a lesion which has caused a dilated inactive pupil. This abnormality can be produced by implication of any part of the central neurone of the oculo-motor nerve from the nucleus to the cortex or to the ciliary ganglion. In this case the ciliary nerves and their terminations in the muscles are unaffected, and eserine produces a prompt contraction of the pupil. The lesion can, however, be situated between the ciliary muscle and the sphincter. Here there are two possibilities. The condition can affect the ciliary ganglion or nerves, in which case the action of eserine may produce myosis as long as the nerve-endings have not degenerated; if the nerve-endings have degenerated eserine should not cause contraction of the pupil. In accordance with this hypothesis, Krusius tried to ascertain whether, in fact, the action of eserine enabled us to localise the lesion producing a dilated inactive pupil. He was not able to obtain any tangible proof that theory and practice coincided. He got a myosis in all cases, even in those of paralysis of the sphincter due to direct traumatism. He concludes that in this connection eserine has no diagnostic value. He thinks that perhaps some result might be attained by instilling weak solutions of eserine into both eyes, and comparing the relative action. In these tests under consideration he used $\frac{1}{10}$ per cent. solution of eserine salicylate. Levinsohn, in a case of nuclear disease associated with ophthalmoplegia interna and secondary atrophy of the sphincter muscle, found eserine relatively inactive.

T. Harrison Butler.

IV.—ONE HUNDRED CASES OF INJURY TO THE EYE.

Hummelsheim, E.—A study of the official records of 100 cases of injury to the eye among the members of the Quarrymen's Union. (Ergebnisse des Actenstudiums über 100 Augenverletzungen aus dem Bereiche der Steinbruches - Berufsgenossenschaft.) *Arch. f. Augenheilk.*, September, 1907, p. 212.

Hummelsheim's paper does not cover a large number of cases, nevertheless it forms interesting reading from the manner in which the author discusses the pitfalls that beset the statistician, and from the results the investigations have led to. Hummelsheim's object was to ascertain how the rate of compensation for the injured man compared with his wages. Some of the results are tabulated below. The author arranges his cases in six groups, four of which are discussed more fully, *viz.* :—

Group I	Group II	Group III	Group IV
Complete loss of one eye. 42 cases	Unilateral traumatic aphakia. 11 cases.	Unilateral traumatic amblyopia, other eye healthy. 25 cases.	Unilateral traumatic amblyopia, previous amblyopia of other eye. 19 cases

The average interval of time between the accident and the last examination of the patient was :—

10·1 years.	9·8 years.	5·6 years.	4·5 years.

The effects of change of occupation ; comparisons of wages ; the compensation received, etc., can be studied in the following tables :—

A. Occupation the same.

16 cases (43·2 %).	6 cases (54·5 %).	14 cases (56 %).	12 cases (66·6 %).
Present wages compared with those at time of accident.			
+ 15·1 %.	+ 34·5 %. (18 %)*	+ 17·0 %.	+ 3·1 %.
Present wages compared with those uninjured fellow workmen at the same work.			
(a) 10 cases equal or more. (b) 6 cases less by 15 %.	Less by 11·2 %.	Less by 1·3 %.	Less by 7 %
Compensation enjoyed.			
by (a) 31·8 %. (b) 30 %	19 %.	15·6 %.	16 %.
Age at accident.			
(a) 33·5 years. (b) 40 years.	26·8 years.	35·1 years.	42·7 years.

B. Occupation changed.

21 cases (56·8 %).	5 cases (45·5 %).	11 cases (44 %)	(6 cases 33⅓ %)
Present wages compared with those at time of accident.			
— 11·7 %.	+ 11·0 % (0·4 %)*	+ 1·4 %.	— 9 %.
Present wages compared with those of corresponding uninjured fellow workmen in the new trade.			
— 19·7 %.	— 10·2 %.	— 2·7 %.	— 18 %.
Compensation enjoyed.			
37·5 %.	25·6 %.	17·1 %.	19·2 %.
Age at accident.			
36·8 years.	36·8 years.	34 years.	42·5 years.

It will be seen, as the author points out, that in group I the men who had changed their occupation were earning 11·7 per cent. less than at the time of the accident. In view of the fact, however, that those who had not changed their occupation were earning 15·1 per cent. more than formerly, the loss was probably 25 per cent. Nevertheless the compensation covers the loss by more than half as much again.

*The figures here require caution, as the number of cases is so small ; if the youngest member here is excluded, the percentage is only 18 % and 0·4 % respectively.

In group II, A. cannot very well be compared with B., as the difference in age is so great. Those who have changed their occupation earn 10·2 per cent. less than their fellow workmen, and their actual loss will be still greater, though it will not reach the rate of compensation, *viz.*, 25·6 per cent.

In group III the loss in wages is only 1·3 per cent., the compensation 15·6 per cent., when the occupation is the same, and the wages have risen 17 per cent. Under change of occupation the wages have only increased 1·4 per cent. In the latter case, therefore, the actual loss is 14 per cent., while the compensation is 17·1 per cent. The average loss for the whole group is 8·6 per cent., the compensation 16·3 per cent.

In group IV the men in the same occupation are earning 7 per cent. less than their fellow men, but 3·1 per cent. more than at the time of the accident, while those who changed their occupation are earning 9 per cent. less, and in reality 19 per cent. less.

The results show that the compensation allowed for the loss of an eye is always considerably greater than the loss in wages. The same appears to hold good for aphakia. For slight injuries to one eye, the other one being sound, the compensation averages double the loss in wages, but in nearly half the cases, it is only a little more. When sight in the other eye is impaired, the average compensation is half as much again as the loss in wages, but in a third of the cases the compensation only just balances the loss in wages.

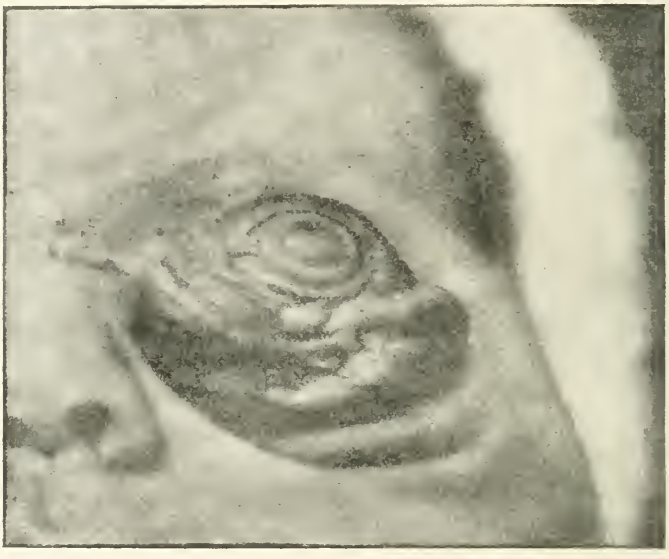
In considering these figures, it must be remembered that they represent percentages, and that the injured persons were comparatively young, so that they would have been expected to show a rise in wages in the ordinary course of events. The comparisons, as a matter of fact, do not turn out to the advantage of compensation. PERCIVAL J. HAY.

V.—DISLOCATION OF THE EYEBALL IN A NEWLY-BORN CHILD.

Fage.—Dislocation of the eyeball in a newly-born child. (Luxation du globe oculaire chez un nouveau-né.) *Archives d'ophtalmologie*, août, 1907, and *Bull. et Mém. de la Société Française d'ophtalmologie*, Vol. XXIV, 1907, p. 492.

After a brief reference to cases reported by Beaumont, Hermite and Salva, and Snell, **Fage** (Amiens) recounts a personal observation of dislocation of the eyeball, the main facts of which are as follows :—A baby girl of three days was brought

to Fage with her left eye, as shown by the figure, completely extruded from the orbit, resting on a thick layer of œdematous tissue, bordered by massive chemosis, and gripped behind by the stretched eyelids. The globe could not be reduced. The cornea was dry, dull, and ulcerated towards its centre. No growth and no collection of fluid could be felt when the finger



was passed around the orbit. The baby was born with the eyeball dislocated. The history was to the effect that the night before the *accouchement* (the woman was at term) the mother received a blow in the lower part of the abdomen, severe enough to knock her down and to cause much pain. The accident occurred with the shaft of a hand-cart. Labour, probably precipitated by the injury, was completed on the following night, without instrumental aid. Presentation normal. The eyeball, etc., were reduced after the external canthus of the eyelids had been freely divided, and the tissues were kept in place by suturing the eyelids together. When the palpebral fissure was re-opened at the end of sixteen months, the eye was found to be in good position, and the movements were good in all directions. The cornea, however, was leucomatous.

SYDNEY STEPHENSON.

VI.—OPERATIONS ON THE ORBIT.

(1) Birdwood, G. T.—A case of Krönlein's operation for orbital sarcoma. *Ophthalmic Review*, March, 1907.

(2) Rollet.—The extirpation of orbital tumours, with preservation of the eye, by means of cutaneous curvilinear incisions. (Extirpation de tumeurs orbitaires, avec conservation de l'œil, par les incisions cutanées curvilignes.) *Bull. et Mém. de la Société Française d'ophtalmologie*, T. XXIV, 1907, p. 358, and *Archives d'ophtalmologie*, mai, 1907.

(3) Grandclément, Lucien.—On the removal of tumours of the optic nerve with preservation of the eye. (De l'ablation des tumeurs du nerf optique avec conservation de l'œil.) *Revue générale d'ophtalmologie*, 31 octobre, 1907.

(1) The right eyeball of a man of 40 years was pushed forward by a large tumour which occupied the lower and outer part of the orbital cavity. The patient could count fingers, although a faint red reflex only could be obtained from the fundus oculi. A tumour, the size of a small hen's egg, was removed by Krönlein's operation. The nature of the growth is not stated by **Birdwood**. The result of the operation appears to have been good. On his discharge, patient could recognise small objects with his right eye. P. E.

(2) **Rollet's** thesis is that good results may be got in the removal of orbital tumours by adopting the old method of orbitotomy—that is to say, a large curvilinear incision through the skin over the neoplasm or other lesion. He reports three cases in which this procedure was successful :—

Case No. 1.—A man of 48 years had suffered for six weeks from a painless swelling in the lower part of one orbit. The tumour was mobile, not attached to the bone, and about as big as an almond. A large horseshoe-like incision, with its concavity upwards, was made through the skin over the swelling, and the contents of the cyst, which was found, were evacuated. Most of the cyst wall was dissected away, and the wound closed with sutures. Staphylococci were found in cultures made from the contents of the cyst. Rapid recovery. Diagnosis : Suppurating orbital cyst.

Case No. 2.—A boy, aged 3½ years, received a blow on the left temple by falling against a piece of furniture, an accident followed after some months by left exophthalmos, reduction in movement of the affected eye, papillitis, and reduction of sight to the ability to count fingers at one metre. No tumour could be felt. A large incision was made on the inner side, *i.e.*, in a direction opposed to the exophthalmos. But minute exploration of the region of the optic nerve yielded negative results. The wound, which was sutured, healed rapidly. Twenty days later, the exophthalmos was considerable and the eye was devoid of movement. A large horseshoe-like incision was accordingly made on the outer side of the orbit, and a large cyst, which ruptured during the operation, was found. It contained about a teaspoonful of black and viscid blood. Extirpation was followed by rapid cure. When patient was seen five months later, restitution *ad integrum*. Diagnosis : Traumatic hæmatocele.

Case No. 3.—A man of 20 showed marked exophthalmos of the right eye, together with papillitis and loss of sight, although no tumour could be felt in the orbit. Symptoms had been present for a month. General examination negative.

By means of a curvilinear incision through the tissues at the inner side of the orbit, a tumour around the optic nerve could be felt with the finger. The neoplasm was excochliated, and the nerve was divided immediately behind the eyeball and again deeply towards the apex of the orbit. One month after operation there was no exophthalmos and the eye retained its movements, volume, and tension. The pupil was dilated and motionless. The tumour, a large spindle-celled sarcoma of alveolar structure, was of yellowish-grey colour. It surrounded the optic nerve, filling the space between the latter and the dural sheath, which formed its envelope. As shown by the figure, it was of oblong shape, 33 mm. long by 27 mm. wide.

Rollet insists upon the good results to be obtained by simple curvilinear cutaneous incisions in orbital tumours. These incisions, as in the cases above, leave the eye intact, and entail neither muscular paralysis nor corneal ulceration, while the resulting cicatrices are altogether insignificant. He inquires what operation should be performed in such cases as his last two, where symptoms included only exophthalmos and papillitis? It has been rightly laid down by Chaillous (*Thèse de Paris*, 1900) that when the diagnosis of the nature of an orbital growth is doubtful, one should never enucleate the eyeball for the purpose of settling the matter. Chaillous believes that in such a case the Krönlein operation is indicated. Lagrange (*Société Française d'ophtalmologie*, 1903) has enumerated the drawbacks of the Krönlein operation under such circumstances. These include destruction of the ciliary ganglion and nerves; production of ptosis, strabismus, and of immobility of the eyeball; and, lastly, of a cicatrix which is not always negligible. Although Rollet himself was the first to recommend trans-osseous malar exploration of the orbit (*Annales d'oculistique*, November, 1901), yet he now prefers simple orbitotomy. Experience has convinced him that the risks of infection are considerable in these operations upon bone. Moreover, he would rather operate in the depths of the orbit by touch than by sight. In cases such as he has described in the present communication, he believes that the best plan is to make large horseshoe-shaped incisions, by means of which the depths of the orbit can be readily explored. SYDNEY STEPHENSON.

(3) **Grandclément's** article deals with the three possible methods of reaching intramuscular tumours, namely, Knapp's operation, Krönlein's operation, and orbitotomy. Knapp's operation consists in reaching the retrobulbar region after incising the commissure and the conjunctival *cul-de-sac*. The great fault of the operation is that it is necessary to divide one or more of the recti muscles. It may be found necessary, for

various reasons, to remove the eye at the time of operation, or a few days later, on account of pain. Recurrences followed by death from intracranial tumour, occurred four times in 22 cases. Corneal lesions followed in 17 of the cases: in five of these the eye was entirely lost. As to late results, more or less complete paralysis of the ocular muscles is the rule, although the levator palpebræ generally recovers, at least partially. Even in the absence of corneal complications, the eye only retained its normal volume in 11 cases, and some of these were quite blind. Often the eyeball shrinks and disappears. In fact, Knapp's operation involves the section, not only of most of the posterior ciliary vessels, but also of the anterior ciliary vessels which might have been able to take their place. The results of Krönlein's operation are much better in all respects except as regards the mobility of the eye. In 10 out of 23 cases there was complete paralysis, in the remainder only limitation of movement in one or more directions. Vision was preserved in three cases. Grandclément then gives, in *résumé*, a case of Rollet's, in which a sarcomatous tumour of the nerve was removed most successfully as regards the subsequent motility and general normality (vision excluded) of the eye by the following method, which, apparently, is called "orbitotomy." At the exact margin of the orbit an incision is made down to and including the periosteum, and of length perhaps equal to one-third of the orbital circumference. The conjunctival *cul-de-sac* must not be opened. Over the area of the orbit, corresponding to this incision, the periosteum is separated right back towards the apex of the orbit. The contents of the orbit are now protected by the detached periosteum. With a blunt instrument this fibrous capsule is opened between and parallel to two of the recti muscles. The finger is introduced into the muscular cone, and the tumour is removed with the least possible employment of cutting instruments. During the latter part of the operation an assistant holds the eye against the opposite wall of the orbit by means of a coffee spoon (Rollet). Grandclément considers that, while this operation is in many cases not equal to Krönlein's, it may very well be a first procedure, to be followed, if necessity demands it, by the Krönlein operation. ERNEST THOMSON.

VII.—THE OPHTHALMO-REACTION.

(1) **Truc, H. and Maillet, F.—Ocular investigations on the Ophthalmo-reaction. (Recherches oculistiques sur l'ophtalmo-réaction.)** *Revue générale d'ophtalmologie*, 30 novembre, 1907.

(2) **Eyre, J. W. H., Wedd, B. H., and Hertz, A. F.—The tuberculin "Ophthalmo-reaction" of Calmette.** *Lancet*, December 21st, 1907.

(3) **Brons, P.—On the ophthalmo-reaction. (Ueber Ophthalmoreaktion.)** *Klin. Monatsbl. f. Augenheilkunde*, January, 1908.

(1) **Truc and Maillet's** more important conclusions are as follows: (1) the presence of ocular lesions does not usually contra-indicate the application; and such lesions are not aggravated by the reaction; (2) tuberculous subjects give a reaction equally clearly, whether the application be made to an affected eye or to a sound one. ERNEST THOMSON.

(2) **Eyre, Wedd,** and **Hertz** after describing not only what has already been done by Calmette, but also the earlier work in the diagnosis of tubercle by scarification of the skin and inoculation with "old tuberculin" (Pùgnet and others), tabulate a series of 138 cases of their own in which the ophthalmo-reaction was submitted to test. It is only possible here to summarise the cases Of the 138 individuals 63 yielded a positive reaction and 75 were unaffected. Of the 63 positive cases, the majority were unquestionably tuberculous. No case definitely reacted in which the absence of tubercle had been proved. Two cases almost certainly tuberculous failed to give a reaction. Of the 75 negative cases, 17 were healthy adults, 12 were doubtful, and 46 suffered from diseases other than tuberculosis. In addition, the authors in a postscript record that in a case of meningitis which ended fatally 30 hours after the application and was found to be due to general miliary tuberculosis, there was no reaction. This experience, they say, "accords with that of Continental observers who state that the reaction cannot be obtained even in undoubtedly tuberculous cases during the last week of life."

ERNEST THOMSON.

(3) **Brons** records his experiences with the ophthalmo-reaction at the eye klinik in Freiburg. His aim was to determine its diagnostic value in eye-diseases as compared with the older method of subcutaneous injections of tuberculin. It may be stated at once that preference is given to the latter for the following reasons: its results are said to be more trustworthy, the occurrence of a local reaction being conclusive evidence of the tuberculous nature of an eye lesion. Moreover, it is free from such serious effects on the eye as have been observed in quite a number of cases by various authors. A 1 to 2 per cent. solution of old tuberculin was used for instillation, whereas 0·001, 0·005, or 0·01 of old tuberculin was injected subcutaneously. Twenty-four cases with suspicious affections such as irido-cyclitis, scleritis, and interstitial keratitis, were subjected to both tests, with the result that the ophthalmo-reaction proved positive nine times, the subcutaneous injections 14 times. This discrepancy would

probably have disappeared if a stronger solution, say 4 per cent. had been instilled in the negative cases, just as the bigger dose of tuberculin was injected in cases that did not react to the small dose. Of 12 patients with non-suspicious eye-diseases, 2 showed an ophthalmo-reaction of medium severity. What is the meaning of a positive ophthalmo-reaction in a diseased eye? It is, answers Brons, no definite proof of the tuberculous nature of the ocular affection, because it may be due to a focus of tubercle in the body which gives rise to no symptoms, and which ordinary methods of examination fail to reveal. Nor can the severity of the reaction be looked upon as a certain sign of the tuberculous character of an eye disease, for the reaction may be mild in undoubted tubercle of the eye, and marked in a healthy eye.

In five of Brons' patients the reaction was excessive: a severe conjunctivitis lasted unduly long, the patients suffered considerably, and the healing process was distinctly retarded. Untoward consequences of greater gravity have been reported from various sides, and Brons concludes with a warning against the indiscriminate use of the ophthalmo-reaction. C. MARKUS.

VIII.—ACUTE CONJUNCTIVITIS.

(1) Usher, C. H. and Frazer, Henry.—An analysis of a series of consecutive conjunctivitis cases seen in Aberdeen. *Royal London Ophthalmic Hospital Reports*, Vol. 16, Part 4.

(2) McKee, S. Hanford.—A case of blennorrhœa neonatorum from the bacillus coli communis. *Montreal Medical Journal*, October, 1906.

(3) Demiéville, E.—Two cases of pseudo-membranous conjunctivitis due to the pneumococcus. (A propos de deux cas de conjonctivites pseudo-membraneuses à pneumocoques.) *Revue médicale de la Suisse Romande*, 20 janvier, 1907.

(4) McKee, S. Hanford.—Purulent conjunctivitis: three cases with different ætiological factors. *Montreal Medical Journal*, February, 1907.

(5) Demaria.—Metastatic conjunctivitis in gonorrhœa. (Conjuntivitis blenorragica metastasica.) *Archivos de Oftalmologia Hispano-Americanos*, Marzo, 1907.

(6) Blanco.—A clinical study of the pseudo-membranous inflammations of the conjunctiva. (Estudio clinico acerca de las inflamaciones pseudo membranosas de la conjuntiva.) *Archivos de Oftalmologia Hispano-Amer.*, April, 1907.

(7) Joland.—Ophthalmia neonatorum. (Ophtalmie purulente des nouveau-nés.) *Ann. de Med. et Chir. Infantiles*, 1er mai, 1907.

(8) Tooke, Fred. T.—Pneumococcus conjunctivitis. *Montreal Medical Journal*, June, 1907.

(9) Hudson, A. C., and Panton, P. N.—An investigation of some of the more unusual forms of acute conjunctivitis. *Lancet*, July 6th, 1907.

(10) Cunningham, H. H. B.—A case of streptococcic conjunctivitis. *Brit. Med. Journal*, July 20th, 1907.

(1) This is the record of an investigation by **Usher** and **Frazer** upon the clinical and bacteriological aspects of a considerable number of cases of conjunctivitis. As nutrient fluids agar tubes were used, in which was some body fluid—either ascitic, ovarian, or hydrocele, and all these fluids were obtained from nine individuals. Of 3,527 eye cases seen in 1905, 820 were cases of conjunctivitis, and this amounts to 23·24 per cent. of the eye cases. Of the 820 cases, 310 proved to be due to the Koch-Weeks' bacillus. These cases are carefully analysed, and the clinical features are described. Phlyctens were noted in 53 of the total number of cases, and in 36 the staphylococcus was also present. In five the Koch-Weeks' bacillus only was found, and in 31 cases it was found in association with some other organism. Several of the exceptional cases are fully described. The media found to be most suitable for these organisms was ovarian fluid. It should be recently obtained, and should contain five to seven per cent. of albumin, and also blood derivatives, the presence of which can be proved by obtaining a spectrum of hæmochromogen. After being kept for six months, although sterile, ovarian fluid does not give satisfactory results with the Koch-Weeks' bacillus. 274 of the 820 patients examined were cases of diplobacillary conjunctivitis, due to the Morax-Axenfeld diplobacillus. In 34·7 per cent. of cases diagnosed as angular conjunctivitis, this bacillus was present, and the conclusion drawn was that angular conjunctivitis occurs in about one-third of all cases due to the diplobacillus, and when angular conjunctivitis is present, it is almost pathognomonic of the presence of the diplobacillus. In the same series of 820 cases, 21 were diagnosed clinically as gonorrhœal, 18 of these were found to be due to the gonococcus, one was due to the diplobacillus, and two to other forms. Only one case of tuberculous conjunctivitis was seen, and that occurred in a girl aged 17 and the diagnosis was clinched by inoculation. One case also was due to diphtheria. 114 cases were left unclassed for various reasons, when the condition present made the isolation of a specific organism unlikely. There is no means of clinically diagnosing cases due to pneumococcus. Trachoma was

not met with in this enquiry. Cases due to the Koch-Weeks' bacillus occurred most frequently in the spring, while the diplobacillary cases were more numerous in the autumn, and, also, the greater the rainfall, the fewer the cases and *vice versa*. Charts and photomicrographs accompany the paper. C. D. MARSHALL.

(2) An infant of four days presented severe ophthalmia of one eye, noticed on the third day of life. Cornea clear. The colon bacillus found in smears and media. Baby made a speedy recovery under warm boric acid irrigations. **McKee** mentions former cases by Axenfeld and Bult. SYDNEY STEPHENSON.

(3) The pneumococcus may produce either catarrhal, purulent, or pseudo-membranous inflammation, this diversity being especially marked in children. The last variety is very rare, and **Demiéville** gives notes of two cases, one of which was complicated with the Löffler bacillus. By contrasting these he derives points which may aid in the differential diagnosis of pneumococcic and diphtheritic membrane on the conjunctiva. He concludes that the pneumococcal membrane is greyish and more adherent than the diphtheritic, which is whitish and thicker. A typical pneumococcal tonsillitis, or pneumonia as a complication, suggests a pneumococcal origin. Unilaterality does not exclude diphtheria, since the case in which the Löffler bacillus was found was unilateral. Demiéville considers that in diphtheritic membrane, the preauricular gland shows a greater engorgement; and, apart from complications, greater constitutional disturbance with high fever indicates diphtheria. But in doubtful cases, the local condition is the best guide in diagnosis. ROSA FORD.

(4) **McKee** describes, among others, a case of acute purulent conjunctivitis associated with the Morax-Axenfeld diplobacillus. Diplobacillary cases, he says, are common in Montreal, where the form the disease usually assumes varies from "mild hyperæmia of the conjunctiva to severe purulent conjunctivitis." Accordingly, he rebuts the common idea that the diplobacillus gives rise to a sub-acute blepharo-conjunctivitis.

(5) **Demaria** records two cases of this comparatively uncommon condition. In one of them there was the rare complication of an ulcer of the cornea. In neither case was the gonococcus found in the scanty discharge. Demaria discusses the difference between the conjunctivitis produced by external infection and that which he is describing. He thinks the metastatic conjunctivitis is due to the actual presence of the micro-organism in the conjunctiva, and not, as many think, to the actions of the toxins elaborated by the coccus in the blood. He thinks that the conjunctiva of an educated person is rarely the seat of gonorrhœal infection. H. GRIMSDALE.

(6) **Blanco** calls attention to the fact that the condition of the organism and its resisting power have large influence on the

course of any inflammation. The same contagion may give rise to the most varying forms of process in different individuals from a simple catarrh in one to a pseudo-membranous conjunctivitis in another, and in others there may be a series of intermediate degrees, linking the slight to the most severe. These intermediate forms are the so-called diphtheroid inflammation. That these forms are really different in degree only has been shown by the experiments of Sourdille, who has found that by increasing the percentage of a caustic solution, it is possible to produce, at will, any of them.

Pseudo-membranes are not the product of one micro-organism only; they may follow the attack of the Weeks' bacillus, of the gonococcus, or of the streptococcus, as well as the Loeffler bacillus, although this last, on the other hand, may merely give rise to a slight catarrh.

The prognosis, therefore, does not rest entirely on the knowledge of what organism is the exciting cause, but on the state of the individual attacked.

It appears that it is the toxin, and not the bacillus itself, that is the true cause of the formation of the membranes; experimenters have applied the toxin to the healthy conjunctiva, and have observed the appearance of the membrane.

HAROLD GRIMSDALE.

(7) In a review on ophthalmia neonatorum, **Joland** agrees with the general view, namely, that infection of the baby's eyes usually occurs when the lids are first opened—that is to say, after the head has been born. The disease occupies the foremost rank as a cause of blindness—1/3 (Rochard); 13,900 among 38,000 (True and Valude); 1/4 (Trousseau); and 30 per cent. (Fuchs). Other figures quoted by Joland are—111 damaged eyes among 507 babies with ophthalmia neonatorum seen by Galezowski. Chevallereau, among 157 children received at the Braille School, found that 57 (36 per cent.) had been blinded from ophthalmia neonatorum; Trousseau, at the Quinze-Vingts, found 29 cases among 627 inmates. The statistics of the Institution des Jeunes Aveugles give a proportion of 34 per cent. Trousseau, at the Braille School, found 100 of the 229 inmates blinded by ophthalmia neonatorum. Lastly, Dehenne, among 100 babies affected with purulent ophthalmia, declared that 35 to 40 remained irremediably blind. With regard to prophylaxis, Joland believes that when the mother has been treated for slight leucorrhœa during pregnancy, and the injections have been continued during labour, it generally suffices to cleanse the baby's eyelids with absorbent wool before the cord is tied, and then to irrigate them freely with sublimate or boric lotion. It is only in cases of virulent vaginal discharge that to those measures should be added the instillation of silver nitrate, 2 per cent., or the insufflation of

powdered iodoform. The isolation of affected babies is recommended—at all events, when the confinement has taken place in a public institution. As to the efficacy of prophylaxis, the well-known figures are quoted of Bischoff, Königstein, Credé, Reymond, Sevray, Alvarado, and Olshausen. Some figures are quoted to show the efficacy of treatment with silver nitrate. For example, in 108 cases of recent ophthalmia treated in that way, Horner lost no single eye. Hirschberg had more than 200, among which six had already sustained corneal damage when presented for treatment. The other 194 cases, however, were completely cured. Schweigger, among 452 cases, found 123 with corneal mischief, but, despite this serious complication, 43 eyes only were lost, while the other 329 cases, treated from the beginning, were cured. Joland glances at the various measures taken in Germany, Austria-Hungary, Switzerland, America, and France, to prevent and to treat ophthalmia neonatorum. In the last-named country the notification of the disease has been obligatory since the year 1892. A combination of the various measures, as notification, instruction of the public, distribution of cautionary notices to those who register a birth, medical visits to women who have been confined by a midwife, and so forth, appears to the author to be desirable. The proposal of Colmenares, to enlist the services of the lay press in making the dangers of the disease known to the public, is mentioned with approval. "*Qui sait, si*," writes Joland, "*quelque jour, un auteur dramatique ne nous prêtera pas comme dans la lutte contre la syphilis, un fort coup d'épaule ?*"

SYDNEY STEPHENSON.

(8) In **Tooke's** first case pneumococci appeared to be the cause of suppuration after cataract extraction, and in the second of acute severe inflammation of the conjunctiva, associated with pronounced chemosis.

(9) **Hudson** and **Panton** give an account of the bacteriological examination of 105 cases of acute conjunctivitis, mainly derived from the Moorfields Hospital, London. The investigation was carried out by means of film preparations and cultures upon solid media, generally blood-serum. Instances of inflammation due to the Koch-Weeks' and the Morax-Axenfeld micro-organisms were almost entirely set on one side, inasmuch as the object of the enquiry was into some of the less common forms of acute conjunctivitis. The organisms met with, named in their order of frequency, were a diphtheroid bacillus, a white staphylococcus, the gonococcus, the staphylococcus aureus, a streptococcus, an intermediate staphylococcus, the diphtheria bacillus, and, finally, an unclassified coccus. The cases were grouped under the following headings, but owing to mixed infections, a certain amount of overlapping was unavoidable. 1. *Streptococci.*—There were, in all, ten cases of streptococcal infection, and in nine of these streptococci were considered to be the

causative factor. They included some of the most severe cases met with in the series. Both eyes were affected in six cases; symptoms were severe in five cases; membrane or pellicle was present on the conjunctiva in six cases; and the lid margins were ulcerated in two cases. Concomitants included impetigo (2), nasal discharge (1), ear discharge (1), enlarged lymphatic glands (2), while the highest recorded temperature was 101° F. There was a history of antecedent measles thrice. 2. *Staphylococcus aureus.*—This organism was present in 24 cases, and was pure or almost pure in 19 of them. In these latter, of which only four could be designated as mild clinically, the aureus was considered to be the causative microbe. 3. *An intermediate staphylococcus.*- This organism, present three times, was Gram-positive, and when its cultures were exposed for some considerable time to sunlight, the colonies remained of a colour intermediate between aureus and albus. All the cases occurred in children under six years of age, but they appeared to present no clinical features in common. 4. *An unclassified coccus.*—A Gram-positive diplococcus, liquifying gelatine in eight days, and on agar producing small, round, white colonies. The coccus was non-pathogenic as regards a guinea-pig. An exactly identical organism has been isolated by the authors from a case of acute cellulitis. 5. *Staphylococcus albus.*—This organism was met with in 28 cases, in pure or almost pure culture in 16 of them. The cases in which the albus appeared to be the causative organism were almost all of mild type. 6. *The gonococcus.*—This organism was obtained in 27 cases, pure in 11 cases, and with a diptheroid bacillus, a white staphylococcus, and so forth, in the remaining 16 cases. Of the 27 cases, 18 occurred in children under one month, and 9 in elder children or adults. Hudson and Panton paid particular attention to the presence in the blood and discharge from the eyes of coarsely granular eosinophile cells, and, on the whole, found a slight but fairly constant increase of those cells in both fluids. They conclude, however, that no reliance can be placed upon it in the diagnosis of gonorrhœal infections. 7. *Diphtheria bacillus.*—Among the 105 cases examined, the Klebs-Löffler bacillus was met with twice only, a fact that leads the authors to conclude that the organism in question is an unusual cause of conjunctivitis. Both patients were children suffering from a moderately severe type of conjunctivitis, not clinically thought to be diphtheritic. Nasal discharge, from which the diphtheria organism was cultivated, was present, and was probably the primary source of infection. Discussing the difficulty of distinguishing between the Klebs-Löffler bacillus and the diphtheroid bacillus (B. xerosis), the authors recommend for the purpose litmus dextrose broth, which is acidified by the former organism in 12 hours at 37°C. The diphtheroid

bacilli met with in the eye affect dextrose so rarely that if a bacillus is present in the discharge and is found to acidify litmus dextrose in from 12 to 24 hours it is advisable to inject antidiphtheritic serum, whether the case clinically resembles diphtheritic conjunctivitis or not. 8. *Diphtheroid bacillus.*—The term "diphtheroid bacillus," as employed by Hudson and Panton, includes bacilli which morphologically resemble the Klebs-Löffler bacillus, but not the Hoffmann bacillus, which was not met with in the series. These organisms were found in 60, or rather more than half the cases examined. In 49 of the cases other organisms were present in addition.

Hudson and Panton reach the following **conclusions** as the consequence of their research.—That staphylococcus albus and s. aureus as well as streptococci, when present in pure culture in acute conjunctivitis, should be regarded as the causal agent, and that the organisms named give rise to a considerable percentage of all cases of acute inflammation of the conjunctiva. The severity of the symptoms will depend partly on the pathogenicity of the particular micro-organism. There is reason for thinking that these bacteria when associated with other pathogenic organisms tend to enhance the severity of the conjunctival inflammation. That staphylococcal as well as streptococcal infections are liable to be accompanied by the formation of membrane on the conjunctiva, and that conjunctivitis due to the Klebs-Löffler bacillus is uncommon, and may be difficult to recognise clinically. Diphtheroid bacilli are present in very many of the cases without appearing to influence the nature of the process. They may represent more than a single species, and it is possible that some may be pathogenic as regards man. There is no evidence, however, that they can ever become transformed into the true Klebs-Löffler organism. Conjunctivitis due to the pneumococcus and the bacillus coli must be rare in London, since not a single case was met with in the authors' series. SYDNEY STEPHENSON.

(10) A case of unilateral conjunctivitis in a child of 2 years, which led to loss of the affected eye, is reported by **Cunningham**. Streptococci in almost pure culture were found in swabs taken from the palpebral sac.

IX.—MERCURIC OXYCYANIDE.

Since the introduction by Lister of the double cyanide of mercury and zinc, the antiseptic properties of mercuric cyanide have been taken advantage of for various purposes, though the drug has not come into extensive use. Recently, however, the oxycyanide has been employed with some success as a vesical antiseptic, and as the relation between the different cyanides of

mercury does not seem everywhere to be fully understood, a short description may be of service.

Mercuro-zinc cyanide, the well-known non-irritant surgical antiseptic, is a double salt of varying composition, prepared by precipitating a solution of mercury and potassium cyanide by means of zinc sulphate. It is chiefly used in the form of 3 per cent. gauze, which is tinted pink with rosaniline. Ointments and pastes, of strengths varying from 1 to 50 per cent. are also used, the weakest being for the eyes and the stronger for skin diseases and as wound dressings.

Mercuric cyanide, or mercury bicyanide. $Hg(CN)_2$, is a crystalline salt, soluble in 10 or 12 parts of water. It is the only true cyanide of mercury, there being no mercurious salt, and is very poisonous. It has been used in syphilis, internally in doses of $\frac{1}{10}$ or $\frac{1}{12}$ grain twice daily, externally as a lotion, and intravenously as a one per cent. solution. In eye affections a 1 in 2000 solution has been employed, and a similar solution has been found to destroy the false membrane in fibrinous rhinitis. Its use, however, is not free from danger. It furnishes a test for bilirubin, with which it gives a red colour.

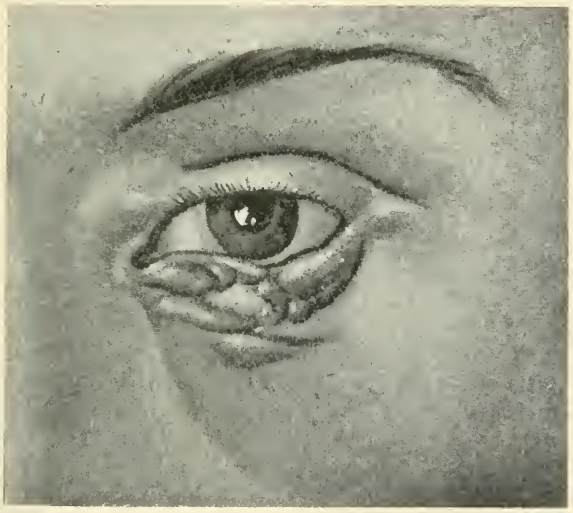
Mercuric oxycyanide, $HgO.Hg(CN)_2$ occurs in small needles, very slightly soluble in water. It explodes when heated. As will be seen from the chemical formula, it is richer in mercury than the cyanide, and it is said to be less toxic, a point which is still open to doubt. It is prepared by dissolving mercuric oxide in a solution of mercuric cyanide and crystallising. As so prepared it usually contains more or less of the cyanide, and Holdermann has devised a process for preparing a pure oxycyanide. Merck announces (*Report*, 1907) that he prepares two different salts; one a pure oxycyanide styled *Hydrarg. oxycyanid. Holdermann*, and another prepared by the old process and designated *Hydrarg. oxycyanid. cryst.* As most of the reported observations have evidently been made with the latter variety, it is doubtful whether the observed effects are due to the oxycyanide or the cyanide. Mercuric oxycyanide does not attack metals, and has therefore been found useful for disinfecting surgical instruments; for this purpose a half to one per cent. solution, with the addition of 5 per cent. sodium carbonate or bicarbonate, is used. A solution in water, strength 1 in 10,000 to 1 in 5,000, forms an excellent wash for bladder irrigation, and it is for this purpose that the salt has recently found favour. As an antiseptic it is equal in effect to sublimate, while it does not corrode instruments, injure the hands, or precipitate albuminous solutions. Care must be taken while using it in this way to avoid the simultaneous administration of potassium iodide, as owing to the formation of caustic mercury iodide, violent cystitis may result.*—*The Prescriber*, January, 1908.

* See *The Prescriber*, December, 1907, p. 2285.

X.—SYPHILITIC LESIONS OF THE EYELIDS.

Parker, Frank Judson.—Syphilitic lesions of the eyelids. *New York State Journal of Medicine*, July, 1907.

Parker prefaces his paper with a brief description of the various kinds of syphilitic lesion of the eyelids, and in doing so quotes interesting figures with regard to chancre of the palpebræ. In the two years from September, 1894, to September, 1896, out of 33,960 eye cases of the Manhattan Eye, Ear, and Throat Hospital, five were diagnosed as chancre of the eyelid. Sturgis in 1873 collected 1,646 cases of chancre, of which six were on the eyelids. Among 9,000 cases of extra-genital chancre collected by Bulkley, four per cent. were on the eyelids or conjunctiva. These and other statistics, according to Parker,



"show either a more careful observation or a marked increase of the eyelids as the point of infection." The lesion, which has been observed at all ages, is much more common in males, and the right is more often affected than the left eye. Infection may be direct, as by kissing, or indirect, as by the fingers or by using sponges, towels, handkerchiefs, or surgical instruments contaminated with the syphilitic virus. The preauricular or submaxillary glands are always enlarged, and the swelling may be so pronounced as to extend from the lobe of the ear to the supra-clavicular fossa.

Parker reports a couple of cases under his personal observation —the first of syphilitic granuloma, and the second of chancre of the lower eyelid. The first patient, aged 31 years, gave a

history of a small sore on his left upper eyelid, eight weeks before he saw Parker, but the lesion speedily yielded to medical treatment. Six weeks later, a small sore appeared on the left lower lid, and the lesion was cauterised elsewhere. Examination by Parker showed that the whole of the lower eyelid was indurated and infiltrated and that towards the centre of the lid was a sloughing ulcer (*see* figure on p. 117). The patient acknowledged having been treated for a chancre two months previously. A section of the tissue was examined by Oatman, who reported "a rapid cellular infiltration suggesting syphilitic granuloma." Rapid healing took place under treatment with mercury protiodide. In about a month after the patient came under treatment there was no trace left of the granuloma except a very slight scar on the eyelid. Parker's second case was a chancre on the upper lid of a clerk, aged 21 years, appearing five weeks after he had been in intimate association with a prostitute. S. S.

XI.—"AFTER-CATARACT."

McGillivray, Augus.—The treatment of "after-cataract." *Transactions Ophthalmological Society*, U.K., 1907.

McGillivray, after pointing out that the dangers of needling are sepsis, undue wounding of vitreous, prolapse of vitreous with adhesions to the wound and dragging on the ciliary body, describes his method of *cutting* the membrane with a convex-edged cutting-needle by sawing movements. The puncture, which may, if necessary, be subconjunctival, is made below at the sclero-corneal margin, and the capsule is sawed diagonally from above downwards and inwards. No aqueous escapes, as the stem of the needle is cylindrical. In the discussion, Lieut.-Col. Herbert agreed that it was very important to saw, and not to cut with a sweep. He used a very narrow Graefe knife. R. W. Doyne thought the secret in avoiding tough capsule was to needle very early after extraction, and W. G. Sym that removal of the anterior capsule at the time of extraction was preferable to the other method. ERNEST THOMSON.

XII.—TABETIC OPTIC ATROPHY.

J. Galezowski and A. Lobel.—Tabetic optic atrophy and central scotoma. (Atrophie optique tabétique et scotome central.) *Recueil d'ophtalmologie*, avril, 1906.

Galezowski and Lobel after discussing the usual type of optic atrophy due to tabes, and the various views as to the histological elements primarily affected, give details of six cases of tabetic atrophy associated with central scotoma. Four of these showed the usual peripheral contraction of the visual field, while the other two presented no abnormality of the peripheral field. The first set of cases were regarded as being cases of ordinary tabetic atrophy, in which the nerve was affected close to the globe where the macular bundle has a peripheral position, and would consequently be implicated early. The second set of cases were considered to be cases of toxic amblyopia (in one case due to aniline dye) occurring in tabetics. They estimate that central scotoma occurs in 2 per cent. to 4 per cent. of cases of tabetic atrophy. J. JAMESON EVANS.

XIII.—BLINDNESS.

(1) **Schiele, A. — Statistics of trachoma blindness in Russia. (Zur Blinden Statistik des Trachoms in Russland.)** *Wochenschrift für Therapie und Hygiene des Auges*, 2 August, 1906.

(2) **Edgar, J. Clifton.—Gonococcus infection as a cause of blindness, vulvo-vaginitis, and arthritis.**

(3) **Bronner, Adolph.—The definition of blindness in children: its causes and prevention.** *Medical Press and Circular*, 4th September, 1907.

(4) **Snell, Simeon.—An inquiry into the causes of the blindness in 333 inmates of the Sheffield School for the Blind.** *British Medical Journal*, 2nd November, 1907.

(1) Those interested in statistics of trachoma should read **Schiele's** article in the original. ERNEST THOMSON.

(2) **Edgar** states that "as this disease (gonorrhœal ophthalmia, occurs in about 0·5 of 1 per cent., or one in 200, of all births) and as the total number of births registered for 1906 in New York was 183,012, the frightful prevalence of the disease can be readily estimated." It was for the purpose of trying to find some solution which might be used without after-neutralisation, that would prevent ophthalmia neonatorum, and at the same time produce no silver-catarrh, that Edgar's observations were made.

As results, he found that "of those children in which one-

half of 1 per cent. of silver nitrate was used, the eyes of 97 per cent. were perfectly normal after ten days, with no discharge up to that time. A number of these were from mothers who had a purulent vaginal discharge on entering the hospital. The other 3 per cent. showed a purulent discharge about the ninth day and were then treated with argyrol and cold applications. "Of these cases, in which 1 per cent. silver nitrate solution was used without after-neutralization, none of the patients had an after-discharge with the exception of the blonde baby, which type of child appears to be more susceptible to the action of the silver salts than dark babies; at least this is the experience of the last seven years in the Bellevue Emergency Hospital; and "In these cases in which 2 per cent. silver nitrate solution was used the result was not so satisfactory. In the few cases tried a large percentage of the children showed signs of severe irritation when the silver solution was not followed by boric acid solution."

Edgar has found, as he says, that "the method which has most commended itself to me is the one now in use at the Bellevue Emergency Hospital. It involves but one additional step in the *technique*, namely, that of following the instillation of several drops of 1 per cent. silver nitrate in each eye by a weak solution of boric acid. This method has been efficacious in several hundred cases, many of the mothers having been previously infected with the gonococcus. From the fact that 1 per cent. solution may be used without after-neutralization it would be perfectly safe to require the use of a 1 per cent. solution of silver nitrate, with after-cleaning by boric acid, and in the event of carelessness or negligence, even if the boric acid solution was not applied, there would no harm come to the eyes of the child." C. A. O.

(3) Of children under 15 years, 423 out of every million are blind—that is to say, they cannot see well enough to find their way about in the day-time or to count fingers at 12 inches. About 80 per cent. of the blindness is due to disease. These statistics, as **Bronner** (Bradford) points out, include only children who are quite blind, and take no cognisance of those with defective sight or who are blind in one eye alone. From a practical point of view, however, a child who cannot see to read is almost as badly off as a child who is quite blind. Bronner advocates some universal standard of defining the various degrees of weak-sight, and to this end suggests that V. of $\frac{6}{9}$ to $\frac{6}{12}$ be called "fair sight," V. of $\frac{6}{18}$ to $\frac{6}{24}$ "weak sight," V. of $\frac{6}{36}$ to $\frac{1}{60}$ "bad sight," and less than $\frac{1}{60}$ "blind." Bronner discusses the more important causes of blindness as under:—1. *Congenital blindness.* These cases could be largely prevented were persons who suffer from hereditary diseases of the eye forbidden to marry. In Bradford, where Bronner practises, there was a family of blind parents with five blind children, all of whom had to be

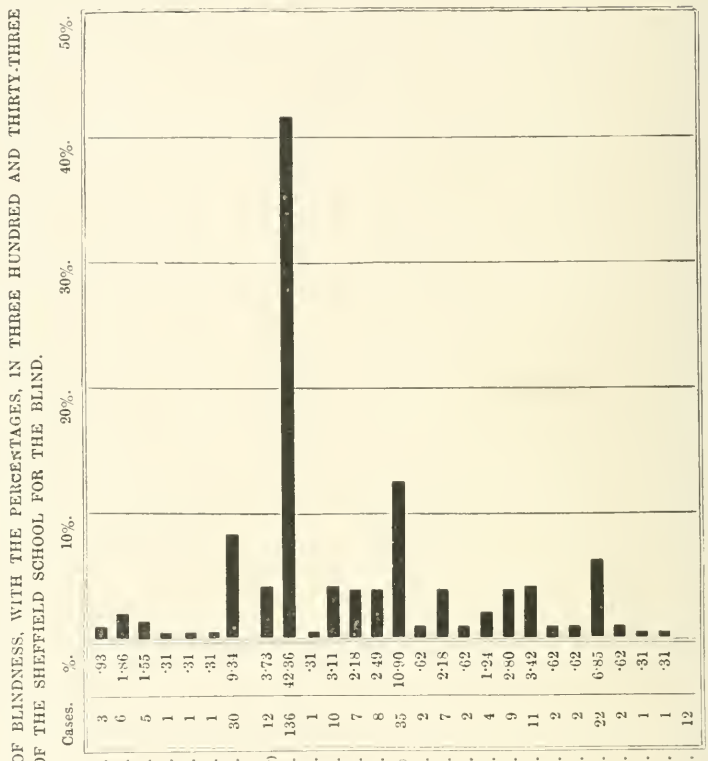
kept at the expense of the public rates in the local workhouse. Every case of syphilis should be treated for two years and not be allowed to marry during that period. 2. *Infantile purulent ophthalmia.* Despite the regulations of the Central Midwives Board,* Bronner saw last year at the Bradford Royal Eye and Ear Hospital no fewer than five cases of ophthalmia neonatorum in which the attending midwife had treated the inflamed eyes for several days instead of sending for a medical man. Three of these babies are now hopelessly blind. Stringent penal enactments are called for in cases of neglect such as these. Cautionary slips regarding the dangers of ophthalmia neonatorum, drawn up by the Bradford Royal Eye and Ear Hospital, were for some years gratuitously distributed by the local registrar of births and deaths. The last-named, however, will no longer fulfil this duty, and so the Hospital authorities have sent slips to every midwife working in the district, and have further caused them to be distributed amongst the out-patients attending the Hospital. It may be noted that similar cards have also been issued by the Committee of Gardner's Trust for the Blind, 53, Victoria Street, London, S.W. 3. *Diseases of the Eye.*—Bronner advocates in-patient treatment for children suffering from ulcers of the cornea. 4. *Small-Pox.*—Here the sovereign remedy is vaccination and re-vaccination. Yet our "wise Government" is affording still further facilities for non-vaccination. In Bronner's opinion, the "conscience clause" should be abolished.

Bronner concludes with some remarks concerning the examination and care of the eyes of school children. All schools should, he thinks, be under medical supervision, and every child should be medically examined for the purpose of determining its fitness or otherwise for school. Vision should be tested by the teachers, and those found lacking should be seen by the school medical officer. A register should be kept. In the case of poor children the necessary prescription should be given by the school medical officer (who should, of course, be specially qualified to do so) and the glasses should then be provided by, and at the expense of, the local authority. Examination of the sight should be repeated annually. SYDNEY STEPHENSON.

(4) **Snell** gives particulars of blindness in 333 children who have passed through the portals of the Sheffield School for the Blind, an institution which contains 70 beds allotted equally to males and females, who are almost without exception below the age of 16 years. During the earlier part of its history the School derived most of its inmates from the Sheffield neighbourhood, but since the Education Act of 1893, a majority of the children have come from elsewhere. The following schema will

* The Central Midwives Board, instituted under the Midwives Act of 1902, issues diplomas to midwives in England, and has disciplinary powers over midwives.

show at a glance the causes, etc., of blindness in the 333 cases analysed by Snell:—



SYDNEY STEPHENSON.

XIV.—POSTERIOR SCLERITIS.

Coats, George.—Posterior scleritis and infarction of the posterior ciliary arteries. *Transactions Ophthalmological Society U. K.*, 1907, p. 135.

Posterior scleritis is a rare disease. **Coats** (London) is not aware of any instance of it in English literature, and only two cases, all told, have been submitted to pathological examination. A summary is first given of similar cases reported by Fuchs (1902), Knapp (1868), Wagenmann, Salzer, Gayet (?), and Coppez (?).

Coats' patient, 38 years, complained of failure of sight in the left eye. It had begun a year previously as a slight mist which increased greatly in density. Glittering scotomata were present, but no pain. No injection of eyeball, lacrymation, or photophobia, swelling of lids, exophthalmus, or pain on backward pressure of eyeball. Lens became cataractous six months later. No important illness since childhood. Syphilis not excluded. No albumen or sugar in the urine. When examined by Wm. Lang—whose case it was—there was chronic irido-cyclitis. Cornea hazy from old precipitates. Lens opaque. Small staphyloma in front of insertion of external rectus. No p.l. T. raised. Right eye normal.

A summary only of the pathological examination can be given, as it is very detailed. Above the disc there was a peculiar diseased patch in the fundus, having the form of a brown island surrounded by a moat or gutter (figure in text). Choroid normal elsewhere, except for a few atrophic patches about the ora serrata, and corresponding to above-mentioned staphyloma. Neither choroid nor retina detached. Microscopic examination of the island-like area showed extensive necrosis of the sclera, choroid, and retina, with surrounding inflammatory reaction. There was no bulging of this area. The papilla moderately cupped. The writer says, in his remarks about the case, that there was something at work beyond ordinary inflammation. The extent of the necrosis was out of all proportion to the amount of inflammatory infiltration. There was necrosis *en masse*, associated with comparatively slight inflammatory reaction, which pointed to the local action of some powerful toxin, or to the cutting off of blood-supply, or to a combination of these factors. The most probable supposition was that the blood-supply has been cut off by the blockage of one of the larger ciliary arteries. He draws attention to the resemblance between the findings here and in a pale infarction of the kidney. The obstruction may have been due to an embolus, to a thrombus, or to inflammatory inflammation in the sclera around the arterial wall.

ERNEST THOMSON.

XV.—TREATMENT.

(1) Chevalier and Scrini.—Alypin, a new local anæsthetic. *Bull. générale de Thérapeutique*, 15 mars, 1906.

(2) Petrosino, R.—Injections of sea-water in eye affections of a lymphatic nature. *Giornale internationale delle Scienze Mediche*, Vol. XXVIII, 1906.

(3) Maggi, F.—Subconjunctival injections in hypopyon-keratitis. *Annali di Ottalmologia*, Vol. XXXVI, 1907, Fasc. 3-4, p. 157.

(4) Rampoldi, R.—The therapeutic action of jequirity in several cases of carcinoma. *Annali di Ottalmologia*, Vol. XXXVI, 1907, Fasc. 3-4, p. 296.

(5) Ferentinos.—Biniodide of mercury dissolved in petrol. *Die Ophth. Klinik*, September 20, 1907.

(6) Price, George H.—Treatment of purulent ophthalmia. *Jour. American Medical Association*, November 23, 1907.

(7) Aubineau and Chinton.—Lupus of conjunctiva and cornea cured by Radiotherapy. *La Clinique Ophtalmologique*, 25 octobre, 1907.

(8) Maser, G. W.—Surgical treatment of detached retina. *Medical Fortnightly*, October 25th, 1907.

(9) Noceti, A.—Three cases of clonic facial hemi-spasm cured by injections of alcohol. *Archives d'ophtalmologie*, novembre, 1907.

(10) Pflugk, v.—On oily collyria, especially Acoin oil. *Klin. Monatsbl. f. Augenheilkunde*, Dezember, 1907.

(11) Fukala. — Notes on treatment. (Communications thérapeutiques.) *Bull. et Mém. de la Société Française d'ophtalmologie*, XXIV, 1907, p. 200.

(12) Fortunati, A.—Picric acid as a means of treatment for chemical burns of the eye, especially by lime. (L'acido picrico nelle ustioni chimiche dell'occhio, conspeciale riguardo in quelle da calce.) *Annali di Ottalmologia*, Vol. XXXVI, 1907. fasc. 9 to 11, pp. 746 to 770.

(13) Valude and Duclos.—The effects of prolonged instillations of adrenalin (an experimental histological study). [Effets de l'adrénaline en instillations longtemps prolongées (étude histologique expérimentale.)] *Ann. d'oculistique*, T. CXXXVIII, p. 115, août, 1907, and *Bull. et Mém. de la Société Française d'ophtalmologie*, Vol. XXIV, 1907, p. 621.

(14) **Ambialet.—On "Gomenol" in the clearing of torpid interstitial opacities of the cornea. (Du "Gomenol" dans l'éclaircissement des kératites parenchymateuses à la période torpide.)** *Annales d'oculistique*, décembre, 1907.

(1) **Chevalier and Scrini** have made a clinical and experimental study of alypin. They conclude that from the ocular point of view alypin does not appear to present any marked advantages over cocain or stovain. As a local anæsthetic, its toxicity is less than that of cocain, though greater than that of stovain. As an infiltrative anæsthetic, it possesses no advantage over stovain. When rapidly introduced into the general circulation by intravenous injection, it is highly toxic, owing to its paralysing action on the medulla oblongata. ERNEST THOMSON.

(2) According to **Petrosino**, dorso-lumbar hypodermic injections of sea-water reduced to organic *isotonicity*, carried out in doses of 5 to 30 c.c. daily, with a medium of 10 c.c., have a rapid and certain effect in strumous eye diseases.
A. ANTONELLI.

(3) **Maggi** has compared the results of injections of *bichlorhydrate* of quinine, 1 to 400, of chloride of sodium, 0·75 per cent., and of sublimate, 1 to 5,000. He prefers quinine injections, which act in a remarkable manner in causing the resorption of pus from the anterior chamber and in limiting the infective process in the cornea. The treatment is more efficacious the earlier it is commenced and the slighter the infective process.
A. ANTONELLI.

(4) In a preliminary note, **Rampoldi** states that in several cases of epithelioma of the face or eyelids of slow development he has obtained very good results by the application of jequiritine in little gelatine discs, prepared by Zambelletti, of Milan. This preparation, or, indeed, the fluid extract of jequiritine, are preferable to the simple maceration of jequirity, which rapidly deteriorates. A. ANTONELLI.

(5) **Ferentinos** claims that a solution of biniodide of mercury in petrol diffuses into the tissues more readily than an aqueous solution, with the added advantage that the solvent itself is an aseptic substance. He has tried it in all external diseases of the eye, and regards it as an indispensable aid to other remedies. The solution recommended is: Hydrarg. biniod., grm. 1, petrol, grm. 1,000; one part of the solution to be mixed with three parts of vaseline oil. PERCIVAL J. HAY.

(7) **Aubineau** and **Cheriton** in reviewing the literature of conjunctival lupus treated by radiotherapy, point out that Sydney Stephenson* in 1903 was the first to report a case in which conjunctival tuberculosis was treated in this way; the disease was cured in thirteen sittings. The authors point out that since then very little has been done in this direction and state that in the *Encyclopédie française d'ophtalmologie* (1906) no mention is

* *British Medical Journal*, June 6th, 1903.

made of radiotherapy in the chapter on tuberculosis of the conjunctiva. Their own case is an interesting and successful one.—A girl of 15 years presented a typical patch of lupus on the nose, and on the bulbar conjunctiva of the left eye, below the cornea, a yellowish-red vegetating patch, about 1 cm. long, which reached to the *cul-de-sac*, and also involved the cornea as far as the lower border of the pupil area in a kind of thick yellowish-white pannus. No glandular enlargement. V.=$\frac{2}{3}$. Treatment at first was by means of the actual cautery. This resulted in continued progress of the disease, which involved the cornea still further and reduced the vision to $\frac{1}{20}$. The *cul-de-sac* itself was now also involved. Salts of silver were then tried, but the disease merely remained stationary. Three months had almost passed since the commencement of treatment and from 20th October, 1905, to 15th March, 1906, the patient had five sittings under the influence of X-rays At the end of this time there was distinct improvement, and vision had risen to $\frac{1}{10}$. From March until December, 1906, the patient had this treatment once a month. The vision had improved to $\frac{1}{8}$. Improvement continued under occasional X-ray treatment, until, on 6th April, 1907, the disease was cured. On this date one required oblique illumination to detect any corneal opacity. There was a little darkness of colour of the conjunctiva near the cornea, but lower down the membrane was normal as far as the *cul-de-sac*, where there was a cicatricial band. V.=$\frac{1}{5}$. During the whole course of X-ray treatment there had been no troublesome reaction. Regarding the *quantity* the authors say: "the quantity of rays absorbed is 5 units H with rays No. 7 according to the radio-chromometer of Benoit." ERNEST THOMSON.

(9) **Noceti** (Buenos Ayres) begins by differentiating carefully between "tics," on the one hand, and "spasms," on the other, two conditions, according to him, constantly confused, even in the most modern text-books of ophthalmology.* Tic is a psycho-motor alteration, an intempestuous, inopportune, and exaggerated functional act, which by repetition may eventually become automatic. It may be moderated by a strong volitional effort. Speaking generally, it is not painful, and disappears during sleep. Spasm, on the contrary, is an involuntary phenomenon, which does not represent any functional act. It is essentially a motor alteration. It lies beyond the control of the will. It is always unilateral, and may be clonic or tonic. It is sometimes accompanied by pain and does not cease during sleep. The details of Noceti's cases are briefly as follows:—

Case No. 1.—A Russian Jewess, aged 36 years, had suffered for five years from spasm, at first limited to the orbicularis palpebrarum, but later extending to the nose, lips, chin, etc., until it had involved the whole of the left side of the face. At the

*Terson, however, protests against this statement, and points out that in the *Encyclopédie française d'ophtalmologie* a clear distinction is drawn between "tics" and "spasm."—*Archives d'ophtalmologie*, décembre, 1907.

beginning of the attack the spasm was clonic but towards the end became tonic. The latter phase lasted on occasion as long as ten seconds, and the accompanying photograph was taken during this period. The intervals between successive attacks varied from half a minute to fifteen minutes. The spasm was present during sleep, and could not be inhibited by the patient's volition. An injection of 1 c.c. of 80% alcohol, containing one centigramme of cocaine hydrochloride, made at the level of the stylomastoid foramen, according to Schösser's *technique*, was followed in the course of three or four minutes by facial paralysis, which lasted for half an hour, when the hemi-spasm appeared with its former intensity. The injection was repeated after an interval of three days. It was succeeded by intense pain and facial palsy, which on this occasion lasted for eighty-five minutes. The hemi-spasm, however, did not reappear. On the following day the region where the injection had been made was swollen and tender. During the 119 days the patient remained under observation after the second injection there was no recurrence of the spasm. As shown by the figure, there remained, however, a slight paresis of the orbicularis muscle.

Case No. 2.—This patient, an intelligent man of 35 years, had tried for three months to cure himself of hemi-spasm by re-educating his facial muscles, in accordance with the advice given by Meige and Feindel's book.* For two years spasm had remained localised to the eyelid, but it then spread to the muscles of the nose and lip, and for three years had involved all the muscles of the right side of the face and had even extended to the platysma myoides. The spasm was chiefly of the tonic variety, and the patient never enjoyed more than ten minutes' freedom from attack. The spasm did not cease during sleep. 1·5 cc. of 80 per cent. alcohol, to which was added 1·5 centigrammes of cocaine, was injected. Complete paralysis of the right facial was produced in four minutes, and lasted ten minutes, after which the spasm reappeared with undiminished intensity. A week afterwards a second injection was practised. Complete freedom from spasm for seven days followed the little operation. A third injection of 2 cc. was made. The resulting facial paralysis disappeared on the fifth day, and spasm has not made its appearance since then.

Case No. 3.—An Italian, aged 23 years, had been affected for eighteen months with spasm of the right facial nerve. Twelve hours sometimes elapsed between successive attacks. The spasm, not influenced by the will, did not cease during sleep. An injection of 1·5 c.c., of alcohol caused in a couple of minutes cessation of spasm and facial paralysis, which lasted half an hour. Spasm, modified in intensity, then returned. But a second injection, made two days later, was followed by radical cure of the condition. SYDNEY STEPHENSON.

*For review see THE OPHTHALMOSCOPE, Vol. 5, 1907, p. 608.

(10) **v. Pflugk**, following Scrini's recommendation, has tried solutions of eserine, atropine, and cocaine in arachis-oil. He is very pleased with the oily solutions prepared by the firm, v. Heyden, in Germany. Considerable difficulties have undoubtedly to be overcome in the manufacture of completely satisfactory preparations, but they are out-balanced by the following advantages: the oily solutions have a greater efficacy and remain sterile much longer than aqueous solutions; they cause no pain or discomfort on instillation. Eserine-oil does not turn red after a lapse of time, and cocaine-oil is free from any damaging effect upon the corneal epithelium. Special praise is given to a 1 per cent. solution of acoine-oil on account of its pain-abolishing properties. C. MARKUS.

(11) **Fukala**, as the result of twenty years' experience, gives his views upon the treatment of several conditions, as under:— 1. *Irido-cyclitis.*—Dilatation of the pupil is to be secured in mild cases with atropine 1 per cent., and in more severe ones by 2 per cent. to 4 per cent. solutions. Sublimate, 1 : 4,000, is recommended as a specific against the inflammation. After cocainisation, the edge of the cornea, and then the sclera far back, is touched with warmed sublimate, applied with a small brush. In mild cases improvement follows on the second or third day after the application, but in serious cases it may not be manifest for four to six weeks. Fukala claims that by the employment of sublimate, the aqueous becomes clear, and that a commencing pupillary exudation may be completely absorbed. As regards iritis punctata (by which the author means the condition more commonly called "keratitis punctata" in this country) treatment similar to that above is employed, followed, if need be, by iridectomy. 2. *Ophthalmia neonatorum.*—Fukala treats this disease by touching the conjunctiva, first exposed by everting the eyelids, once or twice a day with silver nitrate, 4 per cent. He avoids the time-honoured brush, which he considers is liable to produce infections and re-infections, and uses instead a morsel of absorbent wool, held in a pair of forceps. Fukala has some hard things to say about medical men who treat ophthalmia neonatorum without understanding how to evert the baby's eyelids. He does not scruple to trace blindness to this lack of elementary technical knowledge. 3. *Purulent ophthalmia in adults.*—Fukala has been successful in early cases by adopting the same means as those he recommends for the treatment of ophthalmia neonatorum.

The rest of Fukala's communication is occupied with miscellaneous considerations upon the extraction of cataract. His remarks may be epitomized as follows:—cutting and non-cutting instruments alike are disinfected in absolute alcohol, but the exposure in the case of the last-named extends to thirty minutes, or even longer. The greatest importance is attached to complete anæsthesia of the eye. For this purpose Fukala

employs cocaine, at first applied in comparatively weak solution, but culminating in the use of a 15 per cent. solution. He also instils adrenalin, using the Parke, Davis solution, with one-third of water added. The drugs are applied to the eye, the lids of which must be kept closed meanwhile, for at least twenty minutes. Preliminary antisepsis includes washing the skin of the eyelids with sublimate, 1 : 4,000, and syringing the conjunctiva with the same solution. Fukala now performs the operation itself under artificial illumination. No speculum is employed. The eyeball is immobilized during performance of the iridectomy by means of a double suture, passed through the conjunctiva near the lower edge of the cornea. Capsular forceps of the author's own pattern are employed instead of a cystitome. As soon as the extraction is completed, the patient is allowed to rest on a sofa for two or three hours with both eyes bandaged. The binocular bandage is then replaced by one covering the eye which has been operated on alone. The patient is allowed to sit in a chair, and to take his meals as usual, and at nine that night he goes to bed as usual. The following day is passed in his chair. He is allowed to smoke, and even to walk about in his room, provided no complications are present. The bandage is left off some eight to ten days after the extraction. SYDNEY STEPHENSON.

(12) A long clinical experience and the results of experiments on rabbits' eyes authorise **Fortunati** warmly to recommend picric acid in the treatment of chemical burns of conjunctiva and cornea, especially by lime. The author has now replaced a saturated solution of the acid by an ointment, which combines 20 centigrammes of picric acid with 10 grammes of white vaseline. The medicament is applied twice or thrice a day, the conjunctival sac having first been rendered anæsthetic by means of cocaine in order to mitigate the smarting caused by the picric acid. The results of the treatment have been surprising, particularly when the acid has been applied from the beginning, after the eye has been carefully cleansed, and before the supervention of ulceration and of secondary infection. The clarification of opacities, even when deep and widely spread, may attain an unexpected degree. The epithelial layer does not exfoliate, or if it has already done so, is quickly repaired, so that symblepharon is often avoided. The pain and the local reaction are enormously attenuated, and the ulcerous processes are rapidly cured after vascularisation. Treatment should be continued until cure is complete, and even longer. Fortunati's work is most suggestive, and the means indicated by him should be given a trial in these difficult cases. A. ANTONELLI.

(13) **Valude** (Paris) and **Duclos** (Paris), have carried out experiments to ascertain whether prolonged instillations of adrenalin produce any changes in the vessels of the conjunctiva or eyeball comparable to the atheromatous degeneration shown by Josué

to be caused in the aortæ of rabbits by intravenous injections of the drug. They find that daily instillations of 1 in 1,000 adrenalin solution continued for $3\frac{1}{2}$ or 5 months can produce a slight lamellar thickening around the superficial subconjunctival vessels of the eyes of rabbits, but that this change does not extend to the capillaries or to the vessels of the eyeballs. They consider that adrenalin can be freely used, except in cases where there is a tendency to subconjunctival hæmorrhage.

R. J. COULTER.

(14) Gomenol, a vegetable essence obtained from a variety of *melaleuca viridiflora*, is stated by **Ambialet** (Marseilles) to possess strong antiseptic and slight anæsthetic powers, and to be neither irritating nor caustic when applied to the eye. It acts as a vasodilator. When dropped into the conjunctival sac it gives rise to a smarting sensation analogous to that produced by silver nitrate, 1 per cent. Ambialet has used pure gomenol with success in a long-standing case of parenchymatous keratitis due to inherited syphilis. The medicament was applied, at first every other day, and, later, every day. In the course of $5\frac{1}{2}$ months sight rose from perception of light to 1/3. No other treatment, local or general, was employed. In animals a superficial corneal opalescence is produced if cocaine be applied to the eye before gomenol is used. Hence, in clinical work the preliminary use of a local anæsthetic is to be avoided.

SYDNEY STEPHENSON.

XVI.—MISCELLANEOUS.

(1) **Ovio, G.—Associated movements of the eyes and head. (Movimenti degli occhie movimenti del capo combinati: osservazioni di fisiologia oculare.)** *Archivio di Ottalmologia*, Vol. XI, No. 5-6, Nov.-Dec., 1903.

(2) **Ovio, G.—Observations of ocular physiology on the field of vision. (Sul campo visivo, osservazioni di fisiologia oculare.)** *Archivio di Ottalmologia*, Vol. XI, Fasc. 5-6, November-December, 1903.

(3) **Lotin, A. W.—A contribution to the question of eye diseases caused by the larva of the Wohlfahrt fly. (Beitrag zur Frage der Augen-Erkrankungen, die durch die Larven der Wohlfahrt'schen Fliege erzeugt werden.)** *Centralbl. f. prak. Augenheilkunde*, Dezember, 1903.

(4) **Harms.—Senile affection of the macula. (Anatomisches ueber die senile Maculaaffektion.)** *Klin. Monatsbl. f. Augenh.*, 1904, p. 448.

(5) Broca, André, and Sulzer, D.—Retinal function and time reaction. *Journ. de physiologie et de pathologie générale*, juillet, 1902, mars et juillet, 1903, and *Annales d'oculistique*, février, 1904.

(6) Parinaud, H. — Stereoscopy and visual projection. (Stéréoscopie et projection visuelle.) *Annales d'oculistique*, avril, 1904.

(7) Hamilton, Robert J.—Paralysis of the third nerve. *Liverpool Medical and Chirurgical Journal*, June, 1904.

(8) Königshöfer (Stuttgart.) On the classification of cases of neuritis. (Sur la classification des névrites.) Communication faite à la réunion des médecins oculistes du Wurtemberg. *La Clinique Ophtalmologique*, 10 août, 1904.

(9) Micas, de.—Paralysis of the external rectus and neurotic family history. (Paralysie du droit externe et hérédité nerveuse.) *La Clinique Ophtalmologique*, 10 août, 1904.

(10) Ewetzky, Th. and Kennel, J. von.—A fly larva in the anterior chamber. (Eine Fliegenlarve in der vorderen Augenkammer.) *Zeitschrift f. Augenheilkunde*, August, 1904.

(11) Goyanes, Jose.—Osteoma of the frontal sinus. (Estudio del osteoma de los senos frontales.) *Archivos de Oftalmologia Hispano-Americanos*, October, 1904.

(12) Jackson, Edward.—The relations of ophthalmology to other departments of science. *American Medicine*, November 12, 1904.

(13) Cutler, Colman W.—Symmetrical enlargement of parotid and lacrymal glands—nodular iritis. *Medical News*, 17th December, 1904.

(14) Smith, Major Henry, I.M.S.—Night blindness. *Indian Medical Gazette*, February, 1905.

(15) Babinski and Toufesco.—Cyanosis of the retinæ in a case of stenosis of the pulmonary artery without general cyanosis. (Cyanose des rétines dans un cas de rétrécissement de l'artère pulmonaire sans cyanose généralisée.) *Annales d'oculistique*, T. CXXXIII, p. 115, février, 1905.

(16) Alvarado.—Is there a diabetic iritis and glaucoma? And should iridectomy be performed in glaucoma in the presence of diabetes? (Existen la iritis y el glaucoma diabeticos? Debe practicarse la iridectomia en el glaucoma de los diabeticos?) *Archivos de Oftalmologia and Anales de Oftal.*, September, 1905.

(17) Blaschek, A. — An attempted explanation of the paradoxical associated movements of the lids and eyes. (Ein Erklärungsversuch der paradoxen Mitbewegungen zwischen Lid und Auge.) *Zeitschrift f. Augenh.*, Ergänzungsheft, 1905.

(18) Antonelli, A.—The pulsatile phosphene an entoptic phenomenon of the arterial pulse. (Le phosphène pulsatile phénomène entoptique des pouls artériels.) *La Clinique Ophtalmologique*, 10 mars, 1906.

(19) Bargy, M.—Ophthalmic symptoms complicating two cases of malaria. (Zwei Fälle von Augenkomplikation im Verlaufe der Malaria.) *Die Ophth. Klinik*, November, 1906.

(20) Querenghi.—The sympathetic ocular syndrome (a clinical case). (Syndrome oculaire sympathique (observation clinique.) *Ann. d'Oculistique*, T. CXXXVI, p. 389, novembre, 1906.

(21) Mayou, Stephen.—Cyclops. *Transactions Ophthalmological Society* U.K., 1906.

(22) Evans, J. Jameson.—Foreign bodies retained in the eye. *Birmingham Medical Review*, December, 1906.

(23) Bondi, Maximilian.—Fifth report on the eye classification in the general public hospitals in Iglau (1906). [Fünfter Bericht über die Augen-Abteilung im allgemeinen öffentlichen Krankenhause in Iglau (1906).] *Wochenschrift für Therapie und Hygiene des Auges*, 21 März und 4 April, 1907.

(24) Roure.—Some remarks upon superficial foreign bodies in the eye. (Quelques remarques sur les corps étrangers superficiels de l'œil.) *Annales d'oculistique*, août, 1907.

(1) Ovio calls attention to the fact that, under ordinary conditions, we always associate movements of the eyes in the field of vision with movements of the head. The customary ocular movements are limited to about 30 ° (for instance when at work in the office, or when looking on the ground) and we get the rest by inclining the head. The muscular effort is therefore divided, the field of view being changed without reducing the field of vision, and we are more prepared for the reflexes eventually produced by the peripheral or annunciatory vision, and we thereby better preserve our visual appreciation of the relations between objects in space.

A. Antonelli.

(2) By observations made in viewing the stars, gas-jets, the moon, etc., Ovio found that his field of vision exceeds 90 ° on the temporal side, and reaches the right angle as a minimum in other directions, of course avoiding, during the experiment, the obstacles represented by the nose and the orbital arch.

Moreover, the extent of the field of vision would vary according to the intensity of the illumination, absolute and relative, of the objects used for testing, and their dimensions. At a very short distance from the fovea the retinal sensibility would be still more delicate than in the fovea itself, for quite small stars would be invisible if viewed directly, and would appear clearly if viewed by an eccentric arrangement of 5° to 10°. When looking at very small stars, exhaustion is experienced in the central vision; on looking at a very bright star, one observes the sensibility of the retina becoming gradually exhausted from the periphery towards the centre, for the smallest stars disappear one after the other, beginning with those which are most distant from the point of fixation.

A. ANTONELLI.

(3) **Lotin**, of St. Petersburg, quotes the cases that have been reported from time to time of the larva of the Wohlfahrt fly in the orbit and other parts of the eye.

(4) **Harms** found that anatomical examination showed thinning of all layers of the retina. In the region of the fovea the external granules were specially affected; the rods and cones belonging to it were altered or had disappeared. The pigment epithelium was raised by an albuminous substance; the choriocapillaris partially devastated.

A. BIRCH-HIRSCHFELD.

(7) The case here recorded by **Hamilton**, is that of a girl, aged 20 years, who previous to the present affection had never had a day's illness. For the last few months she had suffered from severe headaches, and the last attack was followed by paralysis of the third nerve. Another severe headache left her still worse, and a week later she had complete ophthalmoplegia externa and the left eye became blind. The disc was greyish but not raised, and there was a grey halo round it with some œdema at the macula. The case assumed all the characteristics of a retro-bulbar neuritis, which might have been caused by thrombosis of the cavernous sinus, a tuberculous lesion, or a periostitis. C. D. M.

(9) **De Micas**, recognising that in many cases of this kind no definite cause can be found, publishes the genealogical tree of two cases of paralysis of the external rectus, in one of which he considers there is a sufficiently definite history of nervous heredity. ERNEST THOMSON.

(10) The patient in **Ewetzky** and **Kennel's** case was a boy, age 5½ years, who when first seen had already suffered for four months from repeated attacks of inflammation of the left eye. On examination, there are found considerable pericorneal injection, some opacities in the lower parts of the cornea, discoloured iris, and a broad posterior synechia. In the lower part of the anterior chamber, resting almost on its floor, was seen a parasite of the shape of a worm 6 mm. to 7 mm. long, 1·5 mm. broad, of regular

cylindrical form. The body of the parasite was almost absolutely transparent, of a light-grey colour. No organs could be made out in its interior, but on the surface many fine lines at right angles to the long axis of the body divided it into almost similar segments. Independent movement of the parasite was not seen, but probably took place to a very small extent. An operation was undertaken, and the animal was removed by means of a fine pair of forceps, the body feeling hard under the instrument. The boy made a rapid and uneventful recovery.

Examination of the animal showed it to be the larva of some insect, the nature of which, however, could not be more closely determined, as the peculiar conditions under which the animal had lived had so altered its appearance as to make it unrecognizable.

A. Levy.

(11) Bony tumours arise in the orbit from many different situations. They may be continuous with the bone, connected with the periosteum only, or with other soft parts in which bone does not normally occur. **Goyanes**'case sprang from the posterior wall of the frontal sinus, and during its ablation the cranial wall was necessarily broken ; a further unexpected accident was a perforation of the dura mater and the protrusion of a small mass of brain substance. The tumour, after removal, weighed 42 grms., *i.e.*, about an ounce and a third.

Harold Grimsdale.

(13) A coloured woman, 20 years of age, presented a chronic painless swelling of both parotid and lacrymal glands. The submaxillary glands also were somewhat enlarged. Mouth normal. Liver and spleen not affected. In the anterior chamber of one eye were six or seven small, yellowish nodules. Result of examination of blood negative, except for a slight anæmia. During the two months the patient remained under **Cutler's** observation, the parotid tumours became somewhat smaller ; the lacrymal glands remained without change, and the second eye developed nodular iritis. Cutler mentions several more or less analogous cases culled from the literature.

(15) **M. Babinski** and **Mdlle. Toufesco** record the case of a man, aged 35 years, with stenosis of the pulmonary artery, but no general cyanosis, whose retinæ showed slight but definite cyanosis, as evidenced by general blue colour of the fundus with dilatation of the large vessels, and marked blueness of the veins, which were sinuous. They consider that the condition points to a disturbance in the circulation of the central nervous system, and is probably commoner than is usually thought. As it might give some indications as to prophylaxis, they suggest that it would be advisable to examine ophthalmoscopically all patients suffering from stenosis of the pulmonary artery. R. J. Coulter.

(16) Although iritis is so infrequent in diabetes that it might be supposed to be merely an accidental concomitant, **Alvarado** thinks that there can be little doubt that diabetes is a real cause

of iritis. The disease is accompanied by the formation of toxins, which give rise to severe inflammation of the uveal tract. Examination of the fragment of iris excised in the operation of cataract extraction, has shown that, even when it appears normal, the iris of diabetics is often the seat of a marked œdema. The form of iritis most often observed in diabetes is the plastic; the suppurative form is not infrequent. The occurrence of a diabetic glaucoma is less certain than that of the iritis. Alvarado thinks that it is allied in nature to the arthritic form. There seems no doubt that it is unwise to operate on diabetics in an advanced state of disease. HAROLD GRIMSDALE.

(17) **Blaschek** reports two cases of partial paralysis of some of the eye muscles in people with syphilitic histories. In the first case there was a third nerve paresis of the left side, and a partial ptosis. When an attempt was made to look down to the left, eye and lower lid descended, but the upper lid remained stationary, so that the palpebral aperture was much wider than normal. In the second case there was a similar but better marked condition; there was paresis on both sides, the paradoxical movement was the same. The author discusses the various explanations which have been given to explain these paradoxical associated movements, and suggests himself the presence of association fibres between the various centres involved; these association paths normally only being slightly used, but under the altered circumstances becoming more evident, and that these phenomena are exaggerations of normal physiological processes. The widening of the palpebral fissure on looking down he explains by assuming a spasm of the levator, which therefore cannot be relaxed. A. LEVY.

(18) **Antonelli** confirms by his personal experience the note on this subject by Baslini, of Milan, in the February number of *Archives d'ophtalmologie*, and speculates whether this phenomenon of the appearance and disappearance of a spot of light rhythmically with the pulse under certain circumstances, is due to the neuro-retinal or ciliary system of arteries. He invites further observation of this phosphene in cardiac and arterio-sclerotic cases and in glaucoma. ERNEST THOMSON.

(19) The first case that **Bargy** describes is one of hæmorrhage into the vitreous chamber. The patient was a young man, *ætat* 22, who had been doing two years' military service in Madagascar. During that time he had four attacks of malarial fever. Three months after his return to France he was laid up with malaria again, and it was a week after the onset that the hæmorrhage occurred. The other patient was a lieutenant, who had suffered from malarial fever eight times. Slight interference with vision had manifested itself during the later attacks. It had always disappeared without leaving any traces. The last attack brought the patient to Bargy, to whom he complained of failing sight. Nothing could be found but a slight congestion of the

anterior parts of the eye. Treatment was refused. As had happened before, vision returned to normal, but with this difference, that it now failed regularly every four weeks. The man returned to Bargy, who prescribed quinine, with the result that the eye symptoms disappeared. PERCIVAL J. HAY.

(20) **Querenghi's** patient, a healthy, childless, married woman, aged 55 years, complained of sudden loss of vision in the left eye, coming on several days after the cessation of left fronto-orbital neuralgia, from which she had suffered for a long time. On examination, she was found to have on the left side a narrowed palpebral aperture, slight exophthalmos, abolition of the corneal reflex, corneal infiltration in the form of a fine network and extreme myosis. Under atropine, the pupil dilated partially only, but there were no adhesions. Pericorneal injection, pain, and photophobia were absent. There was some improvement under treatment with potassium iodide. The author considers that the condition was due to paralysis of the left sympathetic nerve. R. J. C.

(21) **Mayou's** careful description of four cases of cyclops, three human and one canine, from the London Hospital Museum, does not lend itself to useful abstraction. Those interested should certainly read it in the original. ERNEST THOMSON.

(22) **Evans'** short paper is devoted to an account of some cases which exemplify the truth of the statement "that an eye which contains a foreign body will, sooner or later, give trouble, and become a danger to the other eye, and that when the foreign body cannot be removed, the removal of the eye is the safest, and probably the only judicious, plan of treatment." E. T.

(24) **Roure** analysed 109 cases where a foreign body was situated on the cornea, and found it to be located on the infero-internal quadrant in 60, on the infero-external quadrant in 27, on the supero-internal quadrant in 13, and on the supero-external quadrant in 9 instances. S. S.

REVIEWS.

Atlas der Ätiologischen und Experimentellen Syphilisforschung. By ERICH HOFFMANN. Berlin: Springer, 1908. 34 plates. Price, 48 Marks.

The fine *Atlas* recently issued by Professor Erich Hoffmann, and dedicated to the memory of Schaudinn, contains several figures of interest to the ophthalmologist. Fig. 2, Plate I, represents an ulcerating primary lesion of the right upper eyelid of a Cercocebus fuliginosus monkey, and Figs. 1 and 2 of Plate V. show later results of the experimental inoculation in the shape and size of the sore and the commencing depigmentation

of the skin. Keratitis syphilitica induced in a rabbit by inoculation of the anterior chamber, and a similar condition in a sheep inoculated from the aforesaid rabbit, are represented in Plate VII. Fig. 3 of Plate VIII, gives the histological appearances of experimental keratitis syphilitica. Further on, Plate XXVII, Fig. 1, spirochætæ pallid. in the cornea of a syphilitic fœtus show up well, as also in Fig. 2, which represents the optic nerve of another fœtus; in both instances Levaditi's first method was employed. The Figures 1 and 2 of Plate XXX, show numerous Sp. pallidæ in the cornea of an experimentally inoculated rabbit, and in the upper lid of a monkey. Apart from the foregoing, the *Atlas* is one which appeals to all interested in the subject, for it is beautifully illustrated with 30 coloured plates and 4 plates of photomicrographs of Schaudinn's own preparations. A good portrait of Schaudinn faces the title page. G. PERNET.

Le Diagnostic de la Tuberculose par l'Ophtalmo-Réaction : Étude clinique et expérimentale. Travail de l'Institut Pasteur de Lille. By Dr. LÉON PETIT, of Lille, France. (**The Diagnosis of Tuberculosis by the Ophthalmo-Reaction.**) Paris: Masson & Co., 120, Boulevard St.-Germain. 1907.

This opportune book of 128 pages, dedicated to Professor Calmette, deals with the diagnosis of tuberculosis by means of the ophthalmo-reaction, a method now shown to be as useful in eye-work as in other branches of medicine and surgery. From the historical introduction to the book, we learn that Wolff-Eisner, in a discussion on von Pirquet's "cuti-reaction," had announced, before Calmette wrote his now well-known article, that a drop of diluted tuberculin was capable of giving rise to a lively reaction when placed in the eye of a tuberculous subject. Vallée, moreover, on the same day that Calmette read his paper before the Academy of Sciences, declared that he had obtained positive results by applying the *technique* proposed by Wolff-Eisner to cattle. Apart from all this, the first clinical trials of the ophthalmo-reaction were made in Professor Combemale's service at the Charity Hospital at Lille and in the children's service under the control of Professeur-agrégé Deléarde, in the same city. Calmette made his first communication on June 17th, 1907, before the Academy of Sciences, and his remarks were published two days later in the *Presse Médicale*.

Dr. Léon Petit describes, turn by turn, the subcutaneous injection of tuberculin, the cuti-reaction of von Pirquet, and, lastly, Calmette's ophthalmo-reaction. Then follows a chapter on the ophthalmo-reaction, in the course of which Petit describes the preparation of the tuberculin, together with the *technique* of the application and characters of the reaction. An interesting

account is given of some experiments on animals carried out at the Lille Institution by Calmette, Breton, and G. Petit. From these it appears that the local reaction to tuberculin is positive when the organism has been sensitized by feeble doses of tuberculin, while the reaction is negative when the organism has been saturated. It further appears that tuberculin absorbed by the digestive tract may sensitize the healthy organism. Lastly, it is pointed out that if tuberculin be injected beneath the skin after the liquid has been dropped into the eye, a fresh reaction may be manifested by the eye treated in this way.

Dr. Petit next describes the clinical use of the ophthalmo-reaction in adult medical and surgical patients, in children, in mental affections, and in ophthalmology. As regards the last, it has been insisted by Calmette, Breton, Painblan, and G. Petit that no attempt should be made to elicit the reaction in eyes affected with external lesions, such as blepharitis or conjunctivitis. The author, however, has not met with any specially intense reaction when tuberculin is applied to the eye under such circumstances. Indeed, in one case, reported by Painblan, the ophthalmo-reaction seemed to have a good influence upon the course of the eye disease. The section concludes with an analysis of the communications of Brunetiere, Chaillous, Aubaret and Lafon, Painblan, and Stephenson.

The last chapter of this useful little book discusses the respective value of the different ways of employing tuberculin for the diagnosis of tuberculosis. H. de V.

Formulario ragionato di oculistica: vade-mecum di terapeutica oculare ad uso dei medici practici. By PROFESSOR E. TROMBETTA. **(A Vade-Mecum of Ocular Therapeutics for the use of Medical Practitioners.)** Small 8vo, 359 pages. Turin: Lattes, 1907.

Professor Trombetta, of the Florence Military School, has brought together in one small book everything that is really useful in ocular therapeutics. Superannuated methods have been omitted or merely glanced at. Trombetta has avoided the *mirage* of many new products, which owe their ephemeral existence merely to the skilful use of the advertising column. On the other hand, the author has insisted upon such medicaments and methods with whose action he is most familiar, especially as regards all that concerns the external diseases of the eye, the commonest maladies that have to be treated by every medical practitioner. Assuredly, the specialist, on reading over the formulary, will be tempted to add many things and to criticise the inclusion of others. That, however, is no reproach, seeing the plain end proposed to itself by Trombetta's little book, in which the personal note rightly

stands prominently in the foreground. The work will be found to respond to the requirements both of the general practitioner of medicine and also of the ophthalmic surgeon. As such, it has our cordial commendation. A. ANTONELLI.

Transactions of the Ophthalmological Society of the United Kingdom. Volume XXVII; session 1906-1907. London: J. and A. Churchill, 7, Great Marlborough Street, 1907 Price, 12s. 6d. net.

The twenty-seventh volume of the *Transactions* of the Ophthalmological Society is quite up to the level of previous volumes. It is handsomely illustrated with coloured and line drawings. Those of its contents that have not yet been abstracted in our columns will receive attention in due course.

Jahresbericht über die Leistungen und Fortschritte im Gebiete der Ophthalmologie. By Dr. JULIUS VON MICHEL. Tübingen: Verlag der H. Laupp'schen Buchhandlung, 1907.

The two volumes of Michel's *Jahresbericht* for the year 1906 have recently reached this office. It is unnecessary to say anything concerning the scope of this publication, which is known the world over, beyond that it is a useful addition to the library of every ophthalmic surgeon.

The Commoner Diseases of the Eye: how to detect and how to treat them. By CASEY A. WOOD and THOMAS A. WOODRUFF. Third edition. Chicago: W. T. Keener and Co. 1907. Price, $2.50 net.

The favourable opinion formerly expressed in these columns with regard to the second edition of Wood and Woodruff's *Commoner Diseases of the Eye* is fully borne out and strengthened by the appearance of a third edition, enlarged and improved. The book is a veritable *édition de luxe*. Its outstanding features, as it seems to us, are two in number; first, the number and excellence of its illustrations, which include coloured plates, as well as black and white "cuts"; and, secondly, the clear and uninvolved way in which the authors express what they have to say. It is a pleasure to read so carefully written a book. We are glad to see special chapters devoted to such useful subjects as "The fundamentals of ocular hygiene"; "Ophthalmology in general medicine and surgery"; "Headache from eye-strain"; "The commoner pathogenic bacteria that invade the eye; and, last but not least, "The commoner relations of nasal and neighbouring cavity diseases to the eye." The last section is from the pen of Dr. Frank Brawley, of Chicago. Wood and Woodruff's book may be unreservedly recommended to all who seek a well-written

and carefully thought-out primer of ophthalmology, and as such it should be most useful to the student and general practitioner of medicine. SYDNEY STEPHENSON.

Bulletins et Mémoires de la Société Française d'Ophtalmologie. Vingt-quatrième année. 1907. Paris: G. STEINHEIL, Éditeur, 2, Rue Casimir-Delavigne.

This portly volume of 680 pages represents the proceedings of the French Ophthalmological Society at its session on May 6th, 7th, 8th, and 9th last. The *pièce de résistance* is furnished by Professor Axenfeld's communication* on spring catarrh, which extends to 134 pages of the *Bulletins*, and which is illustrated by eight coloured plates, including thirteen figures. These are really works of art. The discussion on Axenfeld's communication, in which Boé, Antonelli, Terson, Parisotti, Sulzer, Landolt, Trantas, Fromaget, Aubaret, Kalt, Chaillous, Gonin, Gallemaerts, Armaignac, de Lapersonne, Cuénod, Carra, Sourdille, Péchin, Aubineau, and Darier took part, occupies 65 pages. The rest of the volume contains various communications, of which many have already been abstracted in the columns of THE OPHTHALMOSCOPE. Such of the others as are suitable will be noticed in due course.

Die Photographie des Augenhintergrundes. (Photography of the Fundus Oculi). By DR. FRIEDRICH DIMMER, Graz. With 53 figures in the text and 15 plates. Wiesbaden: J. F. Bergmann, 1907. Price, 14s.

Every ophthalmologist must at times long for the day when photography will be able to do for the fundus what it already does for the surface parts of the eye, for although no monochrome photograph will ever compare in value with a carefully executed ophthalmoscopic picture in its natural colours, cases nevertheless occur daily in which even a monochrome picture of the fundus would be exceedingly valuable. The labour and time involved in the production of accurate drawings of the fundus, make it impossible to obtain such records in more than a fraction of the cases in which they would be of interest or of value, and there is no doubt that an apparatus which would make it possible to obtain trustworthy photographs of the fundus oculi, would be heartily welcomed by clinical workers.

The history of attempts to photograph the fundus oculi has hitherto been largely one of disappointments and failures, for though at first sight the matter seems a simple one, in practice many problems present themselves for solution before even the most imperfect results can be obtained.

In his book Dimmer gives the latest outcome of the painstaking work which has occupied his attention for many years, and the results of which have been published from time to time.

* See THE OPHTHALMOSCOPE, July 1, 1907, p. 401.

Before describing his own latest apparatus he devotes a chapter to the work done hitherto by himself and others, and in another discusses in detail the difficulties which beset the experimenter and the means whereby they may be overcome.

We learn that Noyes, who was the first (1862) to attempt photography of the eye-ground, obtained a certain degree of success with rabbits, but failed with the human subject. Other experimenters were equally unsuccessful with the human eye, until Lowe (1887) obtained photographs of the human fundus, which, in order to shorten the time of exposure, had to be made of very small size, but included a correspondingly wide field. Greater success attended the efforts of Gerloff (1891) and Guilloz (1893), the latter being the first to obtain photographs of the inverted image. How crude and imperfect these earlier results were may be seen from the examples which Dimmer has reproduced in his plates. Nicolaew obtained comparatively good results with some of the lower animals, but only by the employment of methods which would be out of the question in dealing with the human subject. The recent results of Thorner, Wolff, and Dimmer mark a great advance on those of their predecessors. The earlier results were rendered valueless chiefly by the interference of the light-reflexes from the cornea and other media, by want of definition, by smallness of the picture and smallness of the field, and by inequality of illumination. Moreover, the red colour of the fundus has little influence on the sensitive plate. Hence powerful illumination is demanded, and this may prove injurious to the eye, especially if employed for focussing as well as for the actual exposure.

The want of sharpness in the earlier pictures is due, of course, simply to the impossibility of keeping the eye at rest during an exposure lasting several seconds. This difficulty has been largely overcome by the use of strong illumination and sensitive plates, which enable the exposures to be made practically instantaneous. Moreover, Dimmer employs an ingenious device by which he is able to keep the fundus in view until the actual release of the shutter, so that the most favourable moment for the exposure can be seized.

The other hindrances mentioned involve optical problems of considerable difficulty. Chief of these is the interference of the corneal reflex. A number of methods have been employed to overcome this difficulty. The use of polarised light has been rejected because of the loss of light and the contraction of the field involved in the use of the Nicol's prism. Some success attended the immersion of the eye in a water-chamber bounded in front by a flat glass surface, but this also is unsuitable, partly on account of the discomforts attending its use, and partly for optical reasons. In his apparatus Dimmer employs the method introduced by Thorner with the "reflex-less" ophthalmoscope

namely, that of using one part of the pupil for the rays going to illuminate the fundus, and the other for the passage of the rays from the fundus to the observer's eye (or photographic plate). For this purpose a small obliquely placed metal mirror reflects the illuminating rays through the temporal portion of the pupil in such a way that an image of the source of light (the electric arc) is formed in the plane of the pupil. This produces a very uniform illumination of a considerable portion of the eye-ground. The emerging rays pass by the edge of the mirror, through a system of lenses to the camera, the inverted image being employed on account of the large field which it presents.

The plate stands vertically in the camera. In front of it a mirror is placed at an angle of 45° in which the fundus picture is seen by the operator. When the focussing has been completed this is mechanically raised out of the way and the plate exposed. Focussing is carried out by the arc light used for taking the photograph, but it is temporarily reduced in intensity by the interposition of a smoked glass. The various shutters which are necessary for covering and uncovering the source of light and the sensitive plate are operated by electro-magnets which are on a single electric circuit.

After the patient has been placed in position and the illumination properly adjusted, the desired part of the fundus is brought into view and focussed by the obscured arc light. When everything is in order the pressure of a rubber ball releases the sloping mirror which lies in front of the plate. This rises out of the way and by its movement completes the electric circuit, causing the shutters to admit the light to the eye in its full strength, and at the same instant to expose the plate in the camera.

It will thus be seen that the apparatus evolved by Dimmer and the firm of Zeiss, has been most carefully thought out, and by its optical and mechanical devices, has greatly simplified the problem of fundus photography. But, after all, what concerns us is the nature of the results produced, and the possibility of bringing the method into use in our clinics.

If we turn to the plates accompanying Dimmer's volume, we find, beside two plates illustrating the apparatus, two plates giving reproductions of the results obtained by earlier methods, and ten plates containing fifty-two examples of Dimmer's own more recent results.

Many of the earliest photographs have no value except as curiosities, or to emphasise, by contrast, the advance made by the the latest efforts; indeed, compared with the older pictures, Dimmer's results are in every way excellent. They show a field six-disc breadths in diameter in all directions—that is to say, easily embracing the disc, the macula, and the main vascular trunks in a single picture. There is complete absence of confusing reflexes (with the exception of those of the retina

itself). In some there is a surprising clearness of detail, and the best of them present a fairly accurate picture of the appearances which would be seen in the examination of the inverted image, allowing for the absence of colour. Perhaps the greatest drawback is the small size of the pictures (the disc having a diameter of about half a centimetre) and enlargements of these up to the proportion of the erect image is rather unsatisfactory. The absence of colour is in itself a drawback, which, in photographing under more favourable conditions, would be partly compensated for by the use of plates which give the correct colour values. In these illustrations, where pathological changes are present, the colour values are imperfectly rendered. Thus, for example, hæmorrhages show more densely black than the deep black pigment clumps of disseminated choroiditis. This makes interpretation difficult. The over-exposure, which is inevitable in the case of white atrophic patches, a pale disc or a conus, may be, like the results of unequal illumination, partly overcome by manipulation in the printing of the positives.

The conditions represented in the plates are of many kinds, and include, besides the normal fundus, congenital abnormalities, optic neuritis and atrophy, various forms of choroiditis and retinitis, glaucoma, detachment of the retina, and others. It is only fair to say that the author claims to have introduced some improvements while his book was in the press, so that the pictures shown are not the best his apparatus can produce. He tries to dispel from the reader's mind the idea that much time is required to produce the pictures by showing how the greater part of the work can be carried out by assistants, but that, of course, simply transfers the burden to other shoulders.

While the author deserves to be congratulated on the excellent results of the labour which he and his colleagues have given to the subject, the smallness of the pictures and the absence of colour, along with other technical defects, render them of strictly limited value, while the necessarily high cost of such an apparatus makes it impossible to welcome it as the final solution of the problem. There is every reason, however, to hope that where so much has been accomplished further advances are to come. A. J. BALLANTYNE.

Les nouveaux procédés du Diagnostic de la Syphilis. Technique de la recherche des spirochètes dans les frottis et les coupes. Technique des inoculations expérimentales. Technique de la recherche des antigènes et anticorps syphilitiques. By Dr. V. MORAX. Price, 1 fr. 50. Paris: O. Doin, 1908.

Morax has republished his communication on "The New procedures for the Diagnosis of Syphilis," which originally

appeared in the *Annales d'oculistique* for December, 1906, and July, 1907, and of which a translation by Mr. R. J. Coulter was printed in THE OPHTHALMOSCOPE of October and November, 1907. The reprint is illustrated with a plate in colours. Many readers will be glad to possess in convenient form Dr. Morax's painstaking and trustworthy study of the treponema pallidum.

SYDNEY STEPHENSON.

Die Pathologische Anatomie des Auges. By Dr. RICHARD GREEFF. (**The Pathological Anatomy of the Eye**). Berlin: Verlag von August Hirschwald, N.W. Unter den Linden, 68. 1902—1906.

Those who purchased Prof. Greeff's book on the *Pathological Anatomy of the Eye* in separate parts were perhaps a little inclined to grumble at the delay in their issue. No doubt they were unreasonable, for it should be remembered that when the book was commenced it was the first attempt to give a full account of the subject, and the labour involved must have been immense. Now, however, the work has been completed, and can be criticised as a whole.

The natural plan has been adopted of giving—first, a brief account of the normal anatomy of the various structures, and, then, proceeding to describe the pathological changes to which they are liable. This arrangement has been almost too rigidly followed. A chapter dealing in a general way with injuries and their results would have been acceptable. Not that much has been omitted, but to separate wounds of the iris, lens, and vitreous from those of the cornea obscures the narrative of the sequence of events by which wounded eyes are so frequently lost. As it is, one must delve in various parts of the book in order to complete the story. This is even more true of the consequences of contusions. Congenital abnormalities also might with advantage have been treated of in a separate chapter. Indeed, the author rightly departs from his own plan so far as to devote special chapters to glaucoma, sympathetic ophthalmitis, and myopia.

Under the different headings the descriptions are usually exceedingly full and good. One finds frequently, and in many different subjects, little touches which show that the author is writing from his own observations. The account of trachoma is excellent, but one finishes its perusal a little bewildered by the controversies which still rage round almost every point in that baffling disease. Greeff does not believe in the unity of trachoma and follicular conjunctivitis, and in this most British surgeons will agree. His statement that spring catarrh is simply an hypertrophy does not coincide with Axenfeld's recent pronouncement that "spring catarrh is an inflammatory disease." The difficult question of the relation between amyloid and hyalin

degenerations is well discussed, but no certain conclusions seem to be possible at present.

It is well known that much of our knowledge of the processes of inflammation have been derived from experimental lesions of the cornea. A most interesting chapter on this subject is contributed by Prof. Orth. The account of iritis, and especially of tuberculous iritis, is deserving of special mention. One naturally expects a full account of "Greeff's cysts" in the ciliary body after evacuation of the aqueous. The part played by the pigment epithelium in diseases of the choroid and retina is very fully described. Perhaps the least satisfactory chapter in the book is that on glaucoma. Hydrophthalmus especially is very inadequately treated, being dismissed in some twenty lines, and the condition of the corneo-iridic angle is not even mentioned. Secondary glaucoma might also have had a section to itself.

The description of retinal diseases is good, but we notice that, like most German writers, Prof. Greeff attributes the discovery of macular holes to Kuhnt and Haab, whereas they were described by Noyes twenty-five years before the date of these papers. The theories of sympathetic ophthalmitis are fully discussed. Greeff believes the disease to be metastatic, aided perhaps by reflex irritation of the ciliary nerves. A good deal has been added to the subject, however, since the publication of this book—on the histological side by Fuchs, and on the theoretical by Römer.

With regard to optic neuritis, the author gives his adhesion to a modification of v. Graefe's pressure theory, which seems likely, after all, to survive some more recent speculations. In describing cataract the distinction between posterior cortical and posterior polar opacities is not always sufficiently attended to. A most interesting section is devoted to the regeneration of the lens after its removal in some of the lower animals. Pathological states of the vitreous take up more space than is usually accorded them, but the whole chapter is full of original thought and observation. No very active part is attributed to it, rightly, we think. The book ends with chapters on the eyelids and lacrymal apparatus. The histological distinction between epithelioma and rodent ulcer is not sufficiently defined.

A word of praise should be given to the illustrations, which are, with few exceptions, excellent and much to the point. The author's literary style is clear and uninvolved. He does not fail to give his own opinion among conflicting testimonies, nor does he neglect his duty of castigating the unscientific. He characterises a certain paper as "a classical example of what ignorance and lack of the critical faculty can produce." This is severe, but apparently not undeserved in the case in question. Only once have we noticed a direct contradiction between two parts of the book—on the subject of the vascularisation of the fœtal cornea (pp. 113 and 179). Finally, it should be mentioned

that the text contains a superfluity of printers' errors, extending even to the name of the author. GEORGE COATES

Ueber Behandlung von Augenverletzungen. (The Treatment of Wounds of the Eye.) By Prof. Dr. O. LANGE, Augenarzt am Herzoglichen Krankenhause in Braunschweig. Halle a S.: Carl Marhold, 1908. Pp. 32. Preis 0·75 mk.

Prof. Lange, in a short but instructive treatise, points out that since the advance of our knowledge in regard to aseptics and antiseptics, considerable improvements have been made in the treatment of traumatisms of the eye, and he proposes to lay down some general principles that may serve to guide the practitioner in dealing with accidents before they are seen by the specialist. Every wound, even the most superficial, he remarks, should be regarded as infected, and should, as far as possible, be purified by the use of disinfectants. The edges should be so applied that a linear cicatrix may result. Every endeavour must be made to prevent the wound from coming into contact with the conjunctival fluids, which so constantly contain the virulent pneumococcus as well as occasionally other organisms, such as the staphylococcus pyogenes albus, the streptococcus pyogenes, the diplobacillus of Morax-Axenfeld, and the Löffler's diphtheric bacillus. With this object in view, careful examination should be made of the tear-passages. If the slightest discharge from the puncta lacrymalia be observed, the ducts should be submitted to careful and thorough injection and sounding, and if the lacrymal sac present signs of chronic discharge, it should be at once extirpated. If objection be raised to this by the patient, the punctum should be touched with the galvano-cautery, so that it may no longer be a channel of communication between the conjunctival and lacrymal sacs. The cleansing of the conjunctival sac, and especially of its upper fold, is imperative, and the best solution for this purpose is the oxycyanide of mercury* in proportions varying from 1 : 3,000 to 1 : 1,000, which is only slightly irritating. The surface may then be lightly brushed over with a plug of cotton wool, sterilized and moistened with the solution, care being taken to avoid any injury to the epithelium. A sterilized gauze bandage, except in cases of deep burns, should, finally, be applied without pressure.

The more serious forms of injury of the eye are cuts or penetration into the interior of the globe by foreign bodies; wounds made with pointed instruments; injuries, such as contusions inflicted with blunt objects; and, lastly, burns and injuries by chemical agents.

The treatment in the case of all foreign bodies is to effect their complete removal without doing more harm to the eye than is

* See p. 115 of the present issue.—EDITORS.

absolutely necessary. The instillation of a drop of a 2 per cent. solution of cocain facilitates the removal of small as well as large objects which, after eversion, are often found adherent to the inner surface of the upper lid, or lodged in the upper conjunctival sinus. In cases of impaction of sparks from forges, not only the particle of iron, but the stained or carbonised ring of the cornea around it should be removed. Metallic fragments imbedded in the cornea are best removed by means of a powerful magnet. After any of these proceedings, the cornea should be washed with the mercury oxycyanide solution. Lead washes should never be employed. Central opacities, it should be borne in mind, may easily reduce the sharpness of vision to one-third, or even to one-sixth, of the normal degree. Prolapsed portions of the iris are rarely completely and satisfactorily replaced, and, as a rule, all such parts of the iris, ciliary body, choroid, retina, or of the vitreous should be removed before the external wound is closed, for there is great danger that even after short exposure, the prolapsed portion, if replaced, will carry with it some germs or micro-organisms. Splinters of iron, when their position can be ascertained with accuracy by means of the sideroscope, can be removed with the magnet by making a fresh cut, and in the case of fragments of copper, the same proceeding may be adopted and a pair of sterilized forceps carefully introduced through the new opening. Lange records a case where a fragment of iron lodged in the retina after perforating the iris. The treatment adopted was thorough disinfection of the conjunctiva, rest for six weeks (on the back chiefly) in bed, atropine to prevent traction by the ciliary muscle, and a binocular bandage (although the patient had lost the use of the other eye). There were no ill effects, except the presence of a small scotoma and the temporary lowering of the visual acuity to $\frac{6}{9}$. When seen after the lapse of seven years, vision was normal, and although the body could still be seen, it had excited no inflammatory reaction. Foreign bodies sometimes partially or completely traverse the globe, in the former case the precise condition being difficult to establish, but experience shows that enucleation is the most appropriate treatment. Cilia and other hairs, as those of the "procession caterpillar," are sometimes carried into the interior of the globe and should be removed as soon as practicable, as they set up a form of inflammation named by Saemisch "ophthalmia nodosa," due to the formic acid each hair contains. Sharp and pointed objects may scratch, cut, or puncture the globe, and each of these forms of injury may inflict a superficial or a penetrating wound. Scratches of the cornea, as with the nail of the finger, often recover quickly and completely, but sometimes present the symptom of recurring acute nocturnal pain. In such cases, cocain appears to be harmful rather than otherwise, and a 2 per cent. solution of silver nitrate is more effective in relieving the pain. Under unhealthy conditions, the much-dreaded ulcus

cornæ serpens may arise, as Uhthoff and Axenfeld have shown, and this is particularly likely to occur in scratches with the beard of grain, as of barley. In such cases, Prof. Lange has found the application of the galvano-cautery most effective, at the same time disinfecting the conjunctival sac with vaseline containing 1 per cent. of corrosive sublimate. Römer's method of treatment with the pneumococcus serum has not proved useful in his hands. Yeast serum requires further trial. Large serous cysts sometimes form after abrasions, which Lange names "implantation cysts," removable by excision. Deep cells and punctures often lead to loss of the eye. Contusions may lead to rents or to partial detachment of the iris, and consequent iridodonesis, or to hæmorrhages and to dislocation of the lens, or to rupture of the sclera, which sometimes occurs at the opposite pole of the eye or to commotio retinæ. The last sections refer briefly to caloric and lime burns and to gunshot wounds.

HENRY POWER.

NOTES AND ECHOES.

Appointments.

MESSRS. P. FLEMMING, J. H. Fisher, A. Lawson, and C. Devereux Marshall have been appointed surgeons to Moorfields Hospital, London. Dr. John O. McReynolds has been appointed professor of ophthalmology in the South-Western University Medical College at Dallas, Texas. Dr. Benjamin B. Griffith has been appointed on the staff of the Riverside Hospital, Paducah, Ky. Dr. E. C. Renaud has been appointed on the staff of the State Hospital, No. 2, in St. Joseph. Dr. James L. Mimor appointed professor of ophthalmology at the Hospital Medical College, Memphis, Tenn. Dr. Seth M. Morris has been appointed clinical professor of eye, nose, and throat in the medical department of the University of Texas, at Galveston. Mr. J. S. Hosford has been appointed assistant ophthalmic surgeon to the London Temperance Hospital. Dr. B. H. Wedd has been selected as bacteriologist to the Moorfields Hospital, London, E.C. Mr. T. H. Bickerton has been elected President of the Liverpool Medical Institution.

* * *

Moorfields Hospital.

BEFORE these lines are in print, the second Annual Dinner of the Royal London Ophthalmic Hospital (Moorfields) will have taken place at the Trocadero Restaurant, London, with Sir John Tweedy, consulting surgeon to the Hospital and

ex-President of the Royal College of Surgeons of England, in the chair. It is to be hoped that this pleasant reunion may become an annual affair.

* * * *

Professor W. Zehender.

ACCORDING to a recent issue of the *Ophthalmic Record*, Professor W. Zehender has resumed the practice of ophthalmology at Rostock, the scene of his former labours and successes. The professor must be one of the oldest exponents of ophthalmology, since he is now almost 89 years of age.

* * * *

Société d'ophtalmologie de Paris.

THE executive of the *Société d'ophtalmologie de Paris* for the year 1908 includes as President, de Lapersonne; as Vice-President, Péchin; as Treasurer, Duboys de Lavigerie; as Secretaries, Monthus and Cantonnet. Léri has been appointed *membre titulaire*, and Opin, *membre correspondant national*.

* * * *

Examination of school children in New York State.

THE New York Health Department has issued to each teacher in the incorporated villages, which are 446 in number, a set of forms with test-cards, in order that a proper examination may be made and records kept of the condition of the scholars' eyes and ears. Reports must be filed with the State Department within ten days, and notice sent to the parent or guardian of any child whose vision is less than 20/20 in either eye. The work of examining the pupils is cast upon the teachers. As the official forms may be useful to some of our readers, we subjoin those which deal with the examination of the eyes.

* * * *

NO. 1.—New York State Department of Health, Albany.

EYES.

1—*Exceptions.*

Children under 7 years need *not* be examined.

2-3—*General Directions.*

Children wearing glasses should be tested with their glasses properly adjusted to their faces.

Children should be examined singly and privately.

4—*Abnormal Conditions.*

Ascertain whether the child habitually suffers from inflamed lids or eyes or after study has weariness or pain in eyes or head or is suffering from squint (eyes crossed).

No. 2.—Public School, No. ——, 190—

Mr. .....

*eyes

*son ears

An examination of your daughter shows the nose to be defective and ward throat

below the standard required by the State Department of Health. This child cannot do *satisfactory* work in school until this defect is corrected.

You should consult with your family physician or with the health officer of the village as to the choice of an eye or ear doctor, whom you are advised to consult about the trouble.

.....Teacher.

* Strike out the words not required.

No. 3 is a table of fifty numbered lines, headed: Town ———, District ———, School ———, Grade———. No.; Name; Age; Distant vision (20) feet. R. E., L. E.; Focussing power (inches), R. E., L. E.; Eyes, Inflam. Disch., Squint; Lids, Inflam., Scaly, Swollen; Eyes, Pain, Fatigued after use; Headache, Daily, Weekly; Hearing, R. E., L. E.; Ear, Pain; Ear, Disch., Odour; Nose, Colds, Catarrh; Throat, Mouth breather; Cases reported to parents or guardians; Gen. Health, Remarks. [The semicolons indicate the columns.]

5—*Test for Normal Vision.*

Find whether the vision is normal by the large charts. Do not expose the charts except when they are in use, as familiarity leads to memorizing the letters.

6—*Testing Distant Vision.*

The chart should have a *good side* illumination and not be hung in range of a window which will dazzle the eyes. It should be on a level with the head and at a *measured* distance of 20 feet from the child who should sit facing it. Examine each eye separately by holding a card or other screen close in front of one eye while the other is examined, but do not have the test made with one eye closed by pressure or otherwise. Test the right eye first by having the letters named in order from the top downward. For the left eye have the letters named from right to left to avoid repetition from memory.

7—Inability to Name Letters.

Where the child cannot name the individual letters although able to read, the chart of figures may be used It may also be used as a control test. If the child does not know figures or letters use the chart of inverted E's, asking the child to tell by a movement of the hand the side on which there is an opening in the E's in the different lines, *i.e.*, up, down, right or left.

8—Memorizing.

If it is suspected that the answers are being made from memory a hole about one and one-half inches may be cut in a narrow strip of cardboard so as to allow only one or two letters to show through the hole, and by skipping around rapidly it is easy to break up the memorizing of the letters.

9—Recording Distant Vision.

The lines on the 3 large charts are numbered 200, 100, 70, 50, 40, 30, 20. These indicate the distance the respective letters should be read by the normal eye. The record is made by a fraction, of which the numerator represents the distance of the chart from the child, and the denominator the lowest line he can correctly read. Thus if at 20 feet he reads the lowest line the vision is $^{20}/_{20}$ or normal. If he only reads the line above, the vision is $^{20}/_{30}$ or $^{2}/_{3}$ the normal. If he cannot read the largest letter he must go *slowly* toward the chart until he can. The distance he is from the chart when he can read the largest letter will be the numerator and 200 the denominator. Thus, if he could not tell the letter until he is 10 feet from the chart his vision will be $^{10}/_{200}$ or $^{1}/_{20}$ the normal.

10—Testing Near Vision or Focussing Power.

The eyes should also be tested at the near point and separately as with the large chart, the scholar being seated with his back toward the light and with the small chart—diamond type—well lighted. Begin at 18 inches and steadily bring the chart nearer and nearer while the scholar continues to read aloud. When he can read no further, measure the distance from his eye to the chart. If the child has difficulty in reading the chart he can spell the words, and the test will be determined by his failure to pronounce the letters correctly.

11—Recording Distant and Near Vision.

The fractions $^{20}/_{20}$, $^{20}/_{10}$, $^{10}/_{200}$, etc., will record the distant vision (20 feet) of each eye. Reads right eye——inches up to——inches; reads left eye——inches up to——inches will record the focussing power of each eye; as, R. E. = 16 up to 4 in.; L. E. = 15 up to $3\frac{1}{2}$ in.

An Association of School Inspectors.

In France, where the question of school inspection is just at present very much to the fore, it has been proposed by Drs. Leprince (Bourges) and Bérard (Angoulême) to form an association of ophthalmic school inspectors. The scheme has received the adhesion of Truc, of Montpellier, and of Rollet, of Lyons. There is to be no subscription to the new association, which it is intended shall be merely a means of uniting those engaged in a common work and bound together by a common interest.

* * * *

Syndicat général des Oculistes français

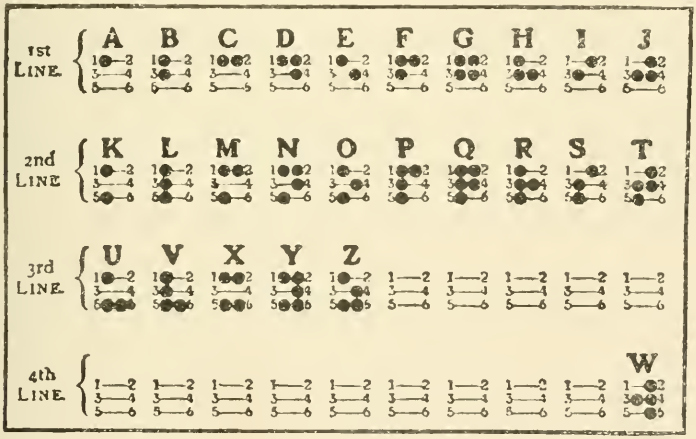
The Syndicate of French Oculists, a useful body on whose work we have commented before, appears to have plenty of business upon its hands. At a meeting of the *Conseil d'administration*, held on November 3rd, 1907, a Committee to co-operate with other medical syndicates, with a view to the protection of mutual interests, was nominated. The ophthalmologists chosen for this purpose were: Motais, Cosso, Bellencontre, Daulnoy, and Giraud. From Amiens and Limoges came complaints from members of the mischief done by consulting-rooms run in those cities by "Norwegian" and "American" oculists. The *Syndicat* determined to insert warning notices in the local press. It was reported that a complaint by the President against a foreign oculist for illegally practising ophthalmology in France, had resulted in the latter being sentenced to imprisonment for one month and mulcted in damages. The *Syndicat* on this occasion determined to forgo the former penalty, and to content itself with the money fine. Another question that engaged the attention of the meeting was concerned with the behaviour of opticians who were exhibiting their wares (and abilities) at the Bordeaux Exposition. In consequence of the representations made by the *Syndicat* to the Bordeaux *Procureur*, the enterprising individuals in question were prohibited from leaving their stalls for the purpose of soliciting custom. Other business included a protest against the new income-tax demands as they affected medical men, the reform of the *Quinze-Vingts*, the abuse of the official tariff for occupational accidents, and other items of interest to ophthalmic surgeons in general. Altogether, the *Syndicat* appears to be engaged in doing most useful work.

* * * *

The "Daily Mail" Edition for the Blind.

December last witnessed the first birthday of a pathetic and momentous experiment, namely, of the *Daily Mail* edition for the blind, printed in raised Braille characters. The blind have thus

been offered an opportunity of keeping themselves in touch with outside events, and of widening their interests, so unhappily curtailed by their dramatic misfortune. The sightless, by a sense of touch allied with a knowledge of Braille character, are thereby enabled to regain some degree of independence. The inventor of the system, a Frenchman named Braille, had himself become blind at an early age. He was at first a pupil in, and afterwards a professor of, the world-famous *Institution Nationale des Jeunes Aveugles* at Paris. His system was grafted upon the older one of Barbier. It consists, as most people know, of an alphabet made up of a number of embossed dots arranged in oblong form. "There are six points and sixty-two possible combinations of the dots, and when their significance has been mastered, the exquisite art of reading by touch has been learned." The Braille alphabet without contractions is shown below.



* * * *

Optical Advertising.

We are glad to see that *The Optician and Photographic Trade Journal*, in its issue of December 27th, admits the fact that many advertisements displayed by opticians throughout the kingdom are false and misleading. Being the official organ of the Worshipful Company of Spectacle Makers and other optical, and non-optical, associations, it proposes to restrict its exuberant pretensions, to check its use of "unfortunate advertising" matter by censorship, and generally to put its "house in order" before taking strong measures against "those who wantonly and maliciously slander the optical profession" (*sic!*). Those disinterested advisers, whose advice is about to be followed, are referred to as "malignant medical groups."

We would suggest, however, that if opticians—who, of course, have every reason to value highly "cordial relations" between

them, "and their local physicians and surgeons or other members of the medical faculty"—wish the continuance of the privilege of fitting and selling spectacles from the prescriptions of medical men, some structural alterations will have to be made before the general cleaning of the house takes place. The private sight-testing room, which is advertised so freely at present, must be reconstructed and used for more legitimate trade purposes than aping the private consulting room of a medical man. Thereafter, attention should be given to the following, which are a few of the many misleading advertisements we have lately seen displayed in the windows of opticians and others :—

"Does your child complain of headache? It is probably due to eye defect. CONSULT us—we are opticians."

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A common and very objectionable form of advertisement is used along with a large diagram of the eye and surrounding structures in colours. It runs as follows :—"We have made a thorough study of the eye and its anatomy and can tell whether benefit will be derived by your wearing glasses."

The party deriving benefit is not specified!

* * * *

Obituary.

IT is with extreme regret that we have to chronicle the death of HERMANN SNELLEN, Professor of Ophthalmology in the University of Utrecht, Holland. A bibliographical notice of our distinguished and genial colleague will be published later. R.I.P.

* * * *

The Ophthalmoscope.

DR. ALEXANDER W. STIRLING, of Atlanta, Georgia, has joined the staff of THE OPHTHALMOSCOPE as correspondent for the Southern States of America. Dr. Stirling's name is well-known in the ophthalmic world.

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THE

OPHTHALMOSCOPE.

A MONTHLY REVIEW OF CURRENT OPHTHALMOLOGY.

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CONTENTS.

Original Communications—

1. Leslie Buchanan, M.D.—Mirror Writing: with Notes of a Case ... 156
2. A. Rudolf Galloway, M.B., C.M., M.A.—Three Cases of Serious Visual Deficiency affecting responsible Employées in the Marine and Railway Services 159

Clinical Memoranda—

1. Lieut.-Col. H. Herbert. F.R.C.S.—Adrenalin with Cocain in Cataract Extraction 163
2. J. Acworth Menzies, M.D.—Vascular Membrane in Vitreous ... 164

Review—

1. Sydney Stephenson.—The Rôle of the Pneumococcus in Ocular Infections 165

Translation—

1. Dr. Krailsheimer.—A Case of Mikulicz's Disease with pronounced Tubercle of the Iris 172

Current Literature—

I. Bacteriology 178
II. The Cornea 180
III. Mirror Writing 185
IV. The Tabetic Eye 186
V. Retinitis Punctata Albescens 188
VI. Anthrax of the Eyelid... 191
VII. Chloroma 193
VIII. Trachomatous Entropion 194
IX. Bactericidal Substances in the Conjunctival Secretion 196
X. Ocular Birth Injuries 198
XI. Tuberculosis of the Choroid 198
XII. Parinaud's Conjunctivitis 199
XIII. Simple Chronic Conjunctivitis 201
XIV. The Colour-Vision of Birds 204
XV. The Oculo-Motor Muscles in Organic Hemiplegia 205
XVI. The Decentering of Lenses 205
XVII. Visual Acuity 207
XVIII. Congenital Entropion 208
XIX. Hæmorrhage from the Conjunctiva 209
XX. Accidental Vaccinia 210

Reviews 211

Obituary—The late Professor Snellen 219

Notes and Echoes 222

ORIGINAL COMMUNICATIONS.

MIRROR WRITING:

With Notes of a case.

BY

LESLIE BUCHANAN, M.D.,

SURGEON TO THE GLASGOW EYE INFIRMARY.

R. P., a healthy boy of seven-and-a-half years, was seen in April, 1907, on account of a peculiar tendency to write reversed letters and figures.

The vision was rather poor on account of hypermetropic astigmatism, and a suitable correction was ordered.

The history of the boy's defect, as obtained from his school teacher, is as follows.—When he first went to school, he was smart and picked up facts quickly, but soon seemed to degenerate and to become slow. When he began to learn writing, copying from an example, it was found that he began at the top right hand corner of the page and wrote with his left hand towards the top left corner. The letters which he formed were reversed. This tendency was combated by the teacher's kindly interest and care, and soon the boy was able to write with the right hand as well as with the left. Still, however, he had a decided inclination to reverse the letters which he wrote. When he began to learn figures, the same difficulty was encountered. He not only reversed individual figures but wrote them from right to left, so that his sums were very extraordinary. Perceiving that there was something abnormal about the boy, the teacher studied him and noted his peculiarities, so that she never in any way misjudged his willingness or industry. Gradually the tendency to make mistakes became less and less, until now there is only an occasional lapse. This is, however, purely the result of constant watchfulness on the part of the boy, for when he does make a mistake, it is when doing something casually, not for inspection, and also he does not see what is wrong until it is pointed out to him. Specimens of mirror-writing submitted to him are read off easily and he sees nothing peculiar about them. He can now write better with the right hand than with the left, but only because he takes great pains to be accurate.

The mother had noticed nothing about the boy that was peculiar except that he always had a distinct inclination to use the left hand in preference to the right. Quite recently, however, she noticed that he readily seemed to become confused when

asked to do anything special, having to think which way to turn, as it were, possibly because he was constantly watching himself.

The mother and father are not left-handed, although an uncle is, and the boy's four brothers are ambidextrous, using either hand indifferently for all purposes.

Doubtless, the boy will finally overcome the tendency to write mirror-wise, but he has, for two years now, made frequent mistakes. He still finds it difficult to see anything at fault about a specimen of reversed writing shown to him, and, as already said, can read it easily.

Remarks.—This, then, is an example of the congenital condition termed by Buchwald "mirror-writing" and by Erlenmeyer "left-handed abduction writing." The condition was the subject of much interest about thirty years ago, and in 1879 there was an editorial note in the *Lancet* concerning the papers on it.

The explanation of the tendency to reverse writing is not easy. Erlenmeyer explained it by supposing that there is a stronger natural inclination to abduct the arms than to adduct them, and that when an individual is left-handed there is an additional tendency to write from right to left, and consequently to reverse the letters.

Taking it for granted, then, that this explanation is more or less correct, let us look for corroboration of it to the various facts concerning the interesting peculiarity which have come to light during the last two or three decades.

To begin with, it must be noted that mirror-writing is not only known as a congenital tendency—we may not call it a defect—and as a form of diversion amongst those who take pleasure in sending puzzle communications on post cards, etc., but is also known as a consequence of lesions which result in inability to use the right hand. There are many well-authenticated instances of individuals who have suffered from right hemiplegia (lesion on the left side of the brain) who have learned to write with the left hand and have had a distinct tendency to write mirrorwise.

Buchwald (1) quotes instances, one of which is the supposed case of Leonardo di Vinci, who is thought to have had hemiplegia and written mirrorwise. Russell (2) quotes a case of similar nature in a man of thirty who had right hemiplegia, and, although naturally right-handed, thereafter wrote mirrorwise. Marinesco (3) saw another case, and Love (4) recorded an instance in which a man, previously right-handed, after a right hemiplegia, exhibited, amongst other interesting peculiarities, a remarkable aptitude for reading mirror-writing. Finally, Acker (5) quotes a case in which, after injury to the right hand, a man learned to write with the left hand, and wrote mirrorwise.

These cases, then, point with some clearness to the fact that

the person who is using the right side of the brain for purposes which heredity has decreed shall ordinarily be performed by use of the left side, has a very strong tendency to write mirrorwise; and we may assume that in the case of the left-handed person the right side of the brain is so used.

Now what are the facts with regard to the congenital form of the tendency? The records of cases show that most instances of congenital mirror-writing occur in children who are left-handed, or are inclined to be so, *i.e.*, are ambidextrous. Cases are recorded by Acker (*ibid.*) Jones (6), Ireland (7), Pendred (8), and Hughes (9).

In some of the records it is not stated whether or not the subject of the condition was left-handed, or, more correctly, right-brained, but undoubtedly the majority of them are.

As further indicating the connection between the left-handed and the mirror-writing tendencies, it is pointed out by Ireland (*ibid.*) that amongst sixty school children who were asked to write their names backwards, five wrote mirror-wise, and were afterwards found to be left-handed. Other tests produced similar results.

There is, then, no doubt as to the connection between the two congenital anomalies, and it is certain that enquiry will show that the left-handed child tends very distinctly to write from right to left and to reverse the letters.

As regards the statement that abduction writing is more easy than adduction writing, a simple experiment will show that this is true. If any person, even though he be right-handed, will try to write with the left hand from left to right, and then tries from right to left, it will be found that the arm seems to move of its own accord in the latter but not in the former direction.

Before leaving this part of the subject, it may be of interest to look into the facts as regards the attempt made by Heywood Smith (10) to prove that the Hebrews were, in ancient times, left-handed. He indicates that Jacob blessed with the left hand. So he did, but it is clearly shown that a right-handed blessing was the more honourable, for Joseph was displeased that his father laid his right hand on the head of Ephraim his younger son (*Genesis* xlviii, verse 14). Again, Smith states that of 27,000 picked fighters 700 were left-handed, whereas in *Chronicles* xii, verse 2, it is said that some of the mighty men of David "could use both the right and the left hand" in fighting. This may not be the exact source of Smith's quotation, but it seems to indicate that to be ambidextrous was at that time a peculiarity at all events.

The question of the possibility of the Hebrews being left-handed is an interesting one in this respect, that the writing was, and is, right to left; and a statistical statement as to the prevalence of left-handedness amongst the Jews at the present time might bring out some interesting facts. There is no doubt

that left-handedness is hereditary, and if the Jews originally were left-handed, it is possible that the tendency would show even now.

There is one other point in connection with this subject which is deserving of note. That is the fact that some mirror-writers can, and others cannot, read what they have written. Dr. Hughes, for instance, who has practised this accomplishment for ten years, and is naturally left-handed, cannot read what is written, whereas most congenital mirror-writers, as my patient, R. P., for example, can read fluently.

It is probable that Dr. Hughes finds difficulty simply because he has had a long familiarity with ordinary writing, and that R. P. and others will ultimately come to the same state. It would be difficult to account for the difference on physiological grounds.

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THREE CASES OF SERIOUS VISUAL DEFICIENCY AFFECTING RESPONSIBLE EMPLOYÉES IN THE MARINE AND RAILWAY SERVICES.

BY

A. RUDOLF GALLOWAY, M.B., C.M., M.A.

PRESIDENT OF THE ABERDEEN MEDICO-CHIRURGICAL SOCIETY; HONORARY OPHTHALMIC SURGEON ABERDEEN EYE INSTITUTION.

Captain of a Government Cruiser suffering from Tobacco Amblyopia.

On 23rd January of last year, the captain of a cruiser in the service of the Government, sought advice concerning a failure of vision which had lasted for three months. He gave the usual history of a fogginess of vision, worse in bright light. He could see the top letter only of Snellen's type with either eye—the left being rather better than the right—*i.e.*, he had $\frac{6}{60}$ (or, roughly speaking, $\frac{1}{10}$ normal vision). Each eye had a well-marked central scotoma for green, red, and blue. An unknown quantity of cigars

and strong black tobacco was smoked by the patient, who, although seeking advice, maintained that he was quite fit for duty, and, in point of fact, was due to sail in command of his ship on the day of his examination.

Colour-Blind Trawl Skipper.

On 18th February of last year, the captain of a trawler regularly sailing from Aberdeen, sought advice at the Eye Institution, and gave the following history.—He was 26 years of age, and had been at sea for 12 years; he passed all the tests given by the Superintendent of the Board of Trade at Grimsby in August, 1905, and obtained his mate's certificate, but when tested at the same place in August, 1906, for his skipper's certificate, he was put back because of colour ignorance. In October or November of the same year he went to Shields, but did not satisfy the examiner, and was told to appeal to London. On December 20th, he was examined in Sir William Abney's laboratory, and was pronounced colour-blind. In consequence of this his mate's certificate has been taken from him.

As he was still unsatisfied he sought my advice, and when tested by Holmgren's wools, was found to be completely colour-blind. With a full understanding of what was required, he repeatedly matched pale-green with greys and drabs, rose-pink with pale-blue, and red with brown. When given a pale-green and pale-blue, along with a dark-blue, he said the two former were most alike in colour.

He has been sailing as skipper of his boat for 4 years; he landed his load of fish at this port on the morning of the present examination. His form-vision is normal. So far as I could see, he left me still unsatisfied as to his defect, and with the intention of continuing his occupation. He is a married man, with a wife and young family to support.

NOTE.—On 20th March this patient came again, and asked to be retested with the wools, as he had been getting coached in the colours, in order to get back his mate's certificate. He again matched greys with pale-green, pale-blue with rose-pink, and brown with red. He is endeavouring to obtain a set of Holmgren's wools in order to practise the test, and so regain his mate's certificate.*

It has been asserted, within recent years, that Holmgren's wools are insufficient in testing for colour-blindness; that it is possible for a colour-blind person by practice to pass it easily; and, also, that colour-normal persons have been rejected by it. Carelessly applied, I believe that these results are possible, but if the patient is led clearly to understand at

Addendum – On 20th June, 1907, at a Marine Board Inquiry in Aberdeen, the patient, having appealed against the decision of the Board of Trade rejecting him from passing an examination as a certificated skipper, had his certificates as second hand and mate declared forfeited, on account of colour-blindness.

the outset what is required, *viz.*: to match colour and not shade, and if it be supplemented by a few tests as to the applicant's knowledge of colour names, *after* the first nameless matching test, then I hold that it is the best and most convenient test we at present possess. On seeing a coloured light at sea, the look-out must mentally name the colour, and act according to his knowledge of the name, as well as his perception of the colour. The non-naming of the colour in the first instance, instead of being a defect as is asserted, is really one of its best points, for the captain of this trawler, when a test skein was handed to him, made every endeavour to get me to name the colour, as he seldom made a mistake in matching when he was in possession of the correct name. It may be necessary, in certain cases, to supplement the wool test by an examination with a lantern, showing coloured lights, which may be partially obscured, so as to simulate fog, rain, or mist.

In toxic or tobacco amblyopia, the wool test is not applicable, as the discovery of the colour scotoma depends on using a very small test object directly in the visual line, a state of affairs which exists when a red or green signal is seen at a considerable distance.

Myopic Engine Driver.

The third case I have to report is that of an engine driver in the employment of one of the principal railway companies running into Aberdeen, who came to the Eye Institution on February 12th of last year, and said that a few days previously he had been tested by the locomotive foreman at Aberdeen and advised to seek advice with regard to his eyesight. He had been tested four years ago by a similar official at Glasgow, and had passed successfully; there had been no test in the interval. He maintained that his sight had always been good, that even now he had no difficulty in seeing signals, and that it was only in a room that he experienced any difficulty. His acuity of vision was as follows:—

$$\text{Each eye } \tfrac{6}{36} \text{ (roughly } \tfrac{1}{6} \text{ normal vision)}$$

$$\text{With } \frac{-1 \text{ D. Sph.}}{-1 \text{ D. cyl. ax. vertical}} = \tfrac{6}{6}$$

As spectacles are not allowed, he left me, as he had come, to resume his responsible work with vision very much below what is considered the limit of safety ($\frac{6}{6}$ in one eye, and not less than $\frac{6}{12}$ in the other being the lowest safe limit).

This engine driver had brought in an express passenger train at an early hour of the morning of examination, and was due to take out one of the most important passenger mails in the afternoon.

Remarks.—In considering these three cases, which occurred in my practice within a period of about three weeks, we are brought forcibly to the conclusion that there is something far wrong in the manner of testing the eyesight of those on whom the lives of so many depend, and we also see in actual operation the forces that may be accountable, although they may not then be discovered, for serious accident in the future.

So many accidents have occurred recently, both at sea and on land, that the public is seriously alarmed, and the companies concerned, in their own interests, will have to take action in the direction of properly qualified, expert, and periodic examination of their employées.

Tobacco blindness, frequent among sailors, and also railway officials, may develop in a few weeks' time and totally incapacitate the individual affected from seeing at the proper distance green and red signals—the two colours on the correct interpretation of which the lives of the travelling public may literally be said to depend.

Yet in all the cases of tobacco blindness among such persons which I have seen, I have been consulted by the patient on his own account and had no assurance that the individual affected suspended, in any case, even temporarily, his responsible occupation.

The question may be asked in cases such as these, whether it is not the duty of the consultant either in his private capacity, or as surgeon to a public institution, to inform the employers of the existence of such defective servants, whose disbelief in their own visual powers is seldom strong enough to cause them to seek relief from duty.

Some medical men have informed me that I should be partly responsible for any accident that might happen as the result of these non-reported cases.

But it seems to me, that any system of eyesight examination which is entrusted entirely to lay representatives of the Board of Trade, locomotive foremen, and other persons, without medical knowledge, and also any that is not periodically repeated, in the case, at least, of the more responsible employées, is so essentially defective, that most good will result by drawing attention to actual cases such as those I have reported to-night.

Addendum.—The Shrewsbury disaster, which occurred in the early hours of Tuesday, 15th October, 1907, causing the death of eighteen persons, and serious injury to many others, is only one more added to the list of so-called "mysterious accidents for which no adequate reason can be found." A likely cause of the mystery, however, is not difficult to find, the locomotive foreman in this case admitting, on being examined by Mr. Lloyd-George, that he had himself to certify that the driver (who was killed) was in good health and fit for his duties, and also stating that there had been no medical examination by a medical man since the driver's admission to the service about forty years before the date of the accident.

Addendum 2. On 8th November another well-marked case of defective sight occurred in an engine driver, who came to the Eye Institution on that date, and gave the following history: He was single, 32 years of age, and had been in railway service for fourteen years; he had noticed his sight defective for ten years, during

which time the left pupil had been rather larger than the right: for most of that period he had acted as fireman, but three years ago he passed the driver's examination, being examined by a lay Inspector, and thereafter by the Superintendent; he had not been tested since then, but had noticed his sight getting somewhat worse.

His acuity of vision was as follows:—

Right	$\frac{6}{24}$ 1 letter	— 1 D. Sph. —·75 D. cyl. ax. vert.	$= \frac{6}{6}$
Left	$\frac{6}{60}$	— 1·5 D. Sph. — ·5 D cyl. ax. 60°	$= \frac{6}{6}$

The eyes were normal in all other respects.

This man attributes his being able to pass the driver's examination to the fact that the Inspector made him occlude one eye by means of a card, for the distance form test. By looking "round the edge" of this card with the other eye, he managed to improve its vision considerably.

Both eyes were put fully under the influence of homatropine and cocaine drops, with no material alteration of refraction. He is regularly employed as engine driver on an Aberdeenshire railway.

CLINICAL MEMORANDA.

ADRENALIN WITH COCAIN IN CATARACT EXTRACTION.

BY

Lieut.-Col. H. HERBERT, F.R.C.S.

In the December, 1907, issue of THE OPHTHALMOSCOPE is an abstract of a paper by Theobald (*Journal American Medical Association*, 27th July, 1907) upon the employment of adrenalin chloride in conjunction with cocain in eye operations. Theobald found the adrenalin useful in lessening hæmorrhage and in increasing the anæsthetic effect of the cocain. Yet, although he had used it several times in cataract extraction with no ill effect, he had "felt more than once that the operation was complicated by its use."

I have used the combination extensively in cataract extraction with increasing confidence and satisfaction. By controlling hæmorrhage it enables one to make us of an unusually complete conjunctival flap without inconvenience, and the decided addition to the anæsthetic action of the cocain is a great help in steadying nervous patients. They often fail to realize that the operation is being performed, and their behaviour is much better than with cocain alone. I have found, further, that the combination enabled me to perform simple extraction of a larger proportion of cataracts than before.

The adrenalin and cocain together commonly dilate the pupil, often widely, and the delivery of the lens without injury to the sphincter of the pupil is thus facilitated. After the operation is over, this dilatation of the pupil may be readily overcome by the use of eserin drops. The action of eserin instilled now is

enhanced by the localizing influence of the adrenalin, just as the effect of the cocain was increased earlier. I used the ordinary eserin solution, 4 grains to the ounce, once freely, or, if the pupil was not perfectly round and small, twice, with an interval of one minute between the two instillations. I commonly found it well contracted 24 hours later, and prolapse of the iris was very uncommon—decidedly more so than in my simple extractions performed without the help of adrenalin.

Care has to be taken to prevent drying of the corneal surface during the cocain instillation (by occasional dropping of saline solution) and especially during the operation. In spite of this care I frequently found next day more or less exfoliation of corneal epithelium; but no harm followed from this, and no ill-effect was seen from the adrenalin.

The adrenalin chloride solution, 1 : 1,000, was always used immediately after perchloride irrigation of the conjunctiva, five minutes before the cocain instillation was begun. And frequently, where, in consequence of very free use of the perchloride, injection of the conjunctiva was anticipated, a second instillation of adrenalin was made two-and-a-half minutes after the first. The cocain instillation period lasted ten minutes, the drops being used four times.

VASCULAR MEMBRANE IN VITREOUS.

BY

J. Acworth Menzies, M.D. (Edin.)

HONORARY OPHTHALMIC SURGEON TO ROCHDALE INFIRMARY.

The following case seems to me to be worthy of record on account of the rarity of the condition of the left eye.

A. W., female, 54 years, had applied to an optician for spectacles, and was advised by him to come to Rochdale Infirmary. She appeared healthy. The eyes, on superficial examination, showed no unusual features. Preliminary ophthalmoscopic examination showed in the right eye a small mass of convoluted veins on the disc, occupying about one-fifth of the disc area. The left disc was normal, but was rendered slightly less distinct by what appeared to be blood-vessels, growing more or less vertically in the vitreous between lens and disc. These vessels could be traced down to a common trunk, arising from a whitish spot about a disc diameter below the disc. In this whitish spot there terminated the inferior temporal retinal artery and vein, and from it there arose a much smaller artery and vein which continued downwards in the same direction as the main trunks. Somewhat further on these smaller vessels showed a narrow white border running along both sides for a short

distance. The appearances suggested that the inferior temporal artery and vein each divided in the whitish spot described above into two branches, one of which continued on the normal course, and the other turned at about a right angle and ran upwards into the vitreous. The branches running into the vitreous appeared to lie in a delicate transparent membrane which formed a kind of partition across the vitreous, parallel to the plane of the lens. In this membrane the vessels branched out to form a flattened tree, the branches of which could be traced to some little distance above the disc before they became too small to be followed farther. These vessels were seen most distinctly on direct ophthalmoscopic examination with the aid of + 7D. or + 8D. The eye itself showed + 2.5D. H. These details were subsequently verified under homatropine. The only other abnormality in the left fundus was a small spot of choroidal atrophy above the macula. Corrected vision was as follows:—

R + 2D. sph $\frac{5}{18}$ + 5 D. sph.
L + 2·5D. sph. $\frac{5}{24}$ + 5·5D. sph. } J. No. 4.

Examination of the right macula with the pupil dilated showed a pigmented condition resembling a leopard skin, in which the ground was of the normal colour, and the spots were brownish-black. How far the defective vision in the right eye was due to this appearance of the macula, and how far to a lack of mental acuteness on the part of the patient, is somewhat doubtful.

Remarks.—The condition of the left eye is an interesting one, and I think there can be little doubt that the abnormal vessels are due to a developmental error. It is to be noted that the part of the fundus from which they spring is in the neighbourhood of the embryonic cleft. It would be difficult to imagine a post-natal disease capable of bringing about such a state of affairs.

REVIEW.

THE ROLE OF THE PNEUMOCOCCUS IN OCULAR INFECTIONS:

A Review.*

BY

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Modern bacteriological researches have taught us the fact that the pneumococcus lanceolatus plays no small part in the

* A contribution to the Discussion on Pneumococcus Infections at the Medical Society of London, *December 9th*, 1907.

causation of several diseases of the eye and of its appendages. For example, it has been found in inflammations of the lacrymal gland and sac, of Tenon's capsule, of the connective tissue of the orbit, of the eyelids, of the conjunctiva, of the cornea, and, lastly, in metastatic forms of panophthalmitis.

Before describing some of these infections more particularly, it should be said that the pneumococcus has been demonstrated in the normal conjunctival sac, where it appears to be capable of leading a purely saprophytic existence. Gasparrini, who was the first to point out this fact, met with the organism in no less than 80 per cent. of his cases (*Annali di Ottalmologia*, XXII, 6, p. 488). His figures, however, have been challenged by other writers, especially by Axenfeld and Oertzen (*Die Baktcriologie in der Augenheilkunde*, Jena, 1907, p. 38), who examined 49 healthy eyes and twice only obtained cultures of the pneumococcus on glycerine-agar. The micro-organisms thus found by them exhibited a low degree of vitality, and were, indeed, scarcely pathogenic as regards animals. Again, A. Lawson (*Transactions of the Jenner Institute of Preventive Medicine*, 1899, p. 56) examined 20 normal conjunctival sacs and found Fraenkel's organism twice only, in both instances in the same patient. The growth died out before Lawson had an opportunity of testing its virulence.

From what has been said we must conclude that the pneumococcus, probably in an attenuated form, can be found only now and then in the healthy conjunctival sac.

That the pneumococcus is pathogenic as regards the eyes of certain animals, as the rabbit, has been proved by the experiments of Guaita, Gasparrini, Hiroda, Römer, de Lapersonne, and others. Broadly speaking, inoculation of the conjunctival sac of those animals produced an inflammation of the conjunctiva; of the cornea, a purulent keratitis, with or without pus in the anterior chamber; and of the vitreous humour, a panophthalmitis.

Inoculations of the human conjunctiva have been made by Hauenschild, Gifford, and Veasey. Hauenschild (*Zeitschrift f. Augenheilkunde*, 1900) set up conjunctivitis in his own eye by inoculating the pneumococcus. H. Gifford (*Archives of Ophthalmology*, Vol. XXV, 1896, p. 314) repeated Hauenschild's experiences with pus from a case of pneumococcal conjunctivitis upon his own eye, as well as upon that of an assistant. In addition to this, he obtained a positive result in two patients to whose conjunctival sacs he applied an anaërobic culture of the third generation. He gave reasons for believing that in some cases one attack of pneumococcus-conjunctivitis exercised a temporary immunizing influence upon the affected conjunctiva. C. A. Veasey (*Archives of Ophthalmology*, Vol. XXVIII, 1899, p. 301) obtained a positive result by inoculating a patient's conjunctiva with discharge taken from a case of severe pneumo-

coccus ophthalmia. Successful results also followed the inoculation of (a) an anaërobic culture of the second generation, and (b) a pure aërobic culture.

One of the most interesting experiences was that related by Hallé (*Annales d'oculistique*, T. 123, 1900, p. 200). A medical man inoculated his own eye during the performance of a thoracentesis for the relief of a pneumococcal pleurisy, and seven days later (!) developed a pneumococcal inflammation of the conjunctiva. Hallé also mentioned another case where conjunctivitis followed three days after the entrance into an eye of the saliva and nasal secretion from a child affected with pneumococcal conjunctivitis.

Among the numerous micro-organisms found in the discharge from a lacrymal sac chronically inflamed on account of some obstruction in the naso-lacrymal duct, the so-called "dacryocystitis," none is of more importance than the pneumococcus, as shown by the researches of Gasparrini, Uhthoff, and Axenfeld. Pneumococci from such a case are apt to inoculate any trivial abrasion of the cornea that may chance to be present, and may thereby give rise to that destructive affection of the eye known in this country as "serpiginous ulcer of the cornea" or "hypopyon-keratitis" and in Germany as "Ulcus Serpens." It is the recognition of this fact that causes the ophthalmic surgeon to lay such stress on the cure of catarrhal affections of the lacrymal passages.

As to the relative frequency of the organism in dacryocystitis, Cuénod found it to be present eight times (80 per cent.) in 10 cases; Gerstenberger, four times (33 per cent.) in 12 cases; Brons, 16 times (53 per cent.) in 30 cases; and Dorland Smith, four times (57 per cent.) in seven cases. It would be a safe generalisation to claim that the secretion of an inflamed lacrymal sac contains pneumococci, pure or mixed with other micro-organisms, in one-half of all cases.

There is an interesting condition not uncommon* in babies where owing to delayed developmental processes, the naso-lacrymal duct instead of being patent at birth, as it should be, is more or less closed by mucous folds or filled with inspissated secretion from liquefaction of the epithelial cells, which in fœtal life form the rudiment of the lacrymo-nasal duct. Should infection occur, as it is apt to do either before or shortly after birth, we have a kind of dacryocystitis produced, or, in rarer instances, an actual lacrymal abscess. In this condition the pneumococcus is often present. Thus, in 20 of my own cases (examined by means of smears and cultures, and confirmed in some instances by animal inoculation) pneumococci were found in 13—that is to say, in pure culture three times, and associated with staphylococcus albus and aureus, streptococcus, bacillus coli,

* Among 1,538 out-patients seen in the eye department of the North-Eastern Hospital for Children, London, no fewer than 27—or 1·75 per cent.—were affected.

pneumo-bacillus, cocco-bacillus fetidus ozenæ, bacillus buccalis max., bacillus subtilis, bacillus xerosis, and a streptobacterium in the remaining cases, ten in number.

The pneumococcus, as already stated, is pathogenic as regards the human conjunctiva, in which it is capable of producing varying degrees of inflammation. Pneumococcal conjunctivitis may be considered as it affects: 1. newly-born babies, and 2. older subjects.

1.—Ophthalmia neonatorum is caused in about two-thirds of all cases by the gonococcus, derived directly or indirectly from the maternal passages. Of the remaining cases, no inconsiderable proportion are associated with the pneumococcus. In round numbers, 10 per cent. of all the cases are due to the pneumococcus. We may conclude, indeed, that next to the gonococcus, the pneumococcus is the commonest micro-organism associated with ophthalmia neonatorum. For the first observation of this kind we are indebted to Victor Morax (*Thèse de Paris*, 1894), who described such a case in a baby aged 8 days. Since then cases have been reported by many writers, including Parinaud (1894), Gasparrini (1894), Axenfeld (1896), Schuhl (1897), Gonin (1899), Groenouw (1899), v. Ammon (1900), Alt (1901), Brewerton (1903), Pollock (1905), Augé (1906), Wharton (1907), and myself. The cases, as a rule, are mild, seldom entail corneal damage, and sometimes present the peculiarity of improving more or less suddenly after lasting for four or five days. It has been suggested by Cramer (*Centralbl. f. Gynäk.*, October 14th, 1899) that in some instances the eyes of the baby may become infected by the saliva of the mother, nurse, or friends. While not denying this possibility—for which, indeed, there is some clinical evidence (Wharton)—it is more probable, I suggest, that the organism is commonly derived from the mother's genito-urinary organs.

The pneumococcus in rare instances may become generalised. For example, I have seen two cases of pneumococcus ophthalmia neonatorum associated, in the second week of the disease, with a sub-acute inflammation of the knee-joint. The arthritis, which was at no time severe, subsided practically without treatment. The cases are clearly analogous to those of gonorrhœal arthritis, first described by Mr. R. Clement Lucas (*British Medical Journal*, February 28th, July 11th, and October 10th, 1885), and by Professor Widmark (*Beiträge zur Ophthalmologie*,* 1891, p. 95). I have published elsewhere (*Ophthalmia neonatorum*, London, 1907, p. 143) a case of mild septicæmia following ophthalmia neonatorum, where there were some grounds for thinking that the pneumococcus was the infecting agent.

2.—In older subjects, pneumococcal conjunctivitis may appear under various clinical guises. Although, in my experience, not common in London, yet it seems to be so in some other

* The original communication was published in *Hygiea*, Bd. XLVII, August, 1885.

parts of the world. Thus, Gifford (*loco citato*) states that it is the most frequent form of conjunctivitis in the district of Omaha, U.S.A., and Veasey (*loco citato*) that it is common in Philadelphia. From certain parts of Germany similar evidence is to hand. Few of the cases I have personally seen could be clinically recognized as pneumococcal, except with the aid of the microscope. Still, there are one or two signs that when present, and more especially when grouped, enable us to diagnose the ailment with some approach to certainty. These include the coexistence of coryza, the presence of a pellicle of fibrin on the surface of the palpebral conjunctiva, or of small multiple ecchymoses into the ocular conjunctiva, and, lastly, of a fleeting rose-coloured puffiness of the free edge of the eyelids.

This form of ophthalmia shows a special tendency to affect children, and when grown-up people are attacked, its symptoms (as pointed out by Axenfeld) are usually of a more severe type.* It is generally bilateral. de Schweinitz's case (*Annals of Ophthalmology*, 1906, p. 191), where an acute pneumococcal conjunctivitis was followed by a large bulla (5mm. by 3mm.) on the centre of the cornea, is probably unique.

Last, but not least, we pass forward to consider briefly pneumococcal infections of the cornea, the practical importance of which it would be difficult to overestimate.

In 1889, Widmark (ref. in *Archives d'ophtalmologie*, July, 1889, p. 371) mentioned a case of serpiginous ulceration of the cornea in which he had found an organism answering to the description of the pneumococcus, and in 1893 Gasparrini (*Annali di Ottalmologia*, 1893) announced that he had obtained cultures of the same organism from numerous cases of hypopyon-keratitis. The pioneer work of these earlier observers (there were others whose names need not be specified) was confirmed and extended in the following year, when Uhthoff and Axenfeld published their well-known work, in which they stated that the ulcus corneæ serpens, described twenty-four years before as a clinical entity by Saemisch (*Das Ulcus Corneæ Serpens und seine Therapie*, 1870), was generally due to the action of the pneumococcus. In 1896 the same writers (*Archiv f. Ophthalmologie*, 42, I, 1896) reported upon fifty cases of ulcus serpens, in which pneumococci had been found in 33, or 66 per cent. In a third communication, Uhthoff and Axenfeld (*Archiv f. Ophthalmologie*, Bd. 44, 1897) reported a further series of 68 cases of serpiginous ulcer, a number that included some that were atypical, although associated with the pneumococcus. Doetsch (*Die Ophthalmologische Klinik*, October 5th, 1900) three years later, found pneumococci 41 times among 63 cases

*Thus, Dorland Smith (*Archives of Ophthalmology*, Vol. XXXIV, 1905, p. 484) mentions a unilateral case in a woman of 35 years, where "the attack was savage enough to raise the question of gonorrhœal infection." The patient, however, recovered in four days.

of hypopyon-keratitis met with in the Jena Eye Klinik during the years 1898 and 1899. Salvaneschi (*Annali di Ottalmologia*, Vol. XXXV, 1906, fasc. 1-2) in 34 cases of hypopyon-keratitis, found the pneumococcus in 30—*i.e.*, 26 times in pure culture and 4 times mixed with other micro-organisms. He believed that its virulence was enhanced under the former circumstances.

Römer declares that the pneumococcus may be demonstrated in 95 per cent. of all cases of serpiginous ulcer of the cornea. For that matter, it may be pointed out that his method of treating ulcus serpens by the intramuscular injection of dead cultures of the pneumococcus implies that all cases of the disease are due to that micro-organism. Indeed, it is obvious that the absolute frequency with which the pneumococcus is found in ulcus serpens will differ according to the methods of investigation employed. In order to obtain the best results, it is necessary: (1) to collect material, not from the floor of the corneal ulcer, where pneumococci are scanty and more or less inert, but from beneath its advancing and yellowish-white edge, where the organism exists in a state of activity; and (2) to employ nutritive media particularly favourable to the growth of the pneumococcus, such as that used by Römer, which consists of bouillon to which one-third part of sterile rabbit's serum has been added.

Thanks largely to the experimental researches of Professor Leber, we are now well acquainted with the pathology of hypopyon-keratitis. The pneumococcus, derived either directly from a diseased lacrymal sac or conjunctiva or from a foreign body* itself, or indirectly from the saliva† or nasal secretion, gets access to the cornea through some abrasion, which is often so trivial as to excite neither the attention nor the solicitude of the patient. The breach of surface is essential: we know that pneumococci are unable to attack the intact epithelium of the cornea. Once in the substantia propria, however, the organism spreads out laterally between the lamellæ, and proceeds to elaborate its toxins. Now, although Descemet's membrane is germ-proof, yet it appears to oppose no barrier to the diffusion of toxins. The latter, accordingly, are enabled to pass through the membrane and in that way to reach the aqueous humour and the structures, as the iris, in contact with the humour. The toxins exercise a noxious influence upon the blood-vessels of the iris, ciliary body, and the parts about Fontana's spaces, whereby leucocytes are caused to migrate into the anterior chamber, where they become visible under the guise of a larger or smaller collection of pus (hypopyon). This process explains the fact

* Uhthoff and Axenfeld (*Archiv f. Ophthalmologie*, XLII, I, p. 1) nevertheless failed to find the pneumococcus in objects by means of which corneal abrasions are commonly inflicted, as morsels of stone, twigs, and ears of wheat.

† G. Hotta (*Klin. Monatsbl. f. Augenheilkunde*, September, 1905) injured the cornea of rabbits in several ways and then inoculated the wounds with human saliva. Positive results, as shown by iritis and hypopyon, obtained whenever the cornea was "pocketed." Pneumococci found in 36 per cent. of these cases.

(which is disputed by nobody who has undertaken the necessary investigations), namely, that the pus in the anterior chamber in cases of hypopyon-keratitis is free from bacteria. The only exception to this rule is to be found in cases where the cornea has already perforated. The older observers had noticed that in some cases a filament of pus appeared to connect the corneal infiltration, on the one hand, with the hypopyon, on the other. This appearance they interpreted as meaning that the pus in the chamber was due to a backward extension of the suppurative process going on in the cornea. We now recognise that, in point of fact, it is owing to a process of chemotaxis.

Typical ulcus serpens, as outlined above, occurs only in middle-aged or elderly persons, usually of the labouring classes, who are naturally more exposed to injuries of the eye than others better placed in the social scale, and who, besides, are apt to attach little importance to a watery or a discharging eye. Pneumococcal infection of the cornea is commoner during the warm summer months than at other seasons of the year, possibly because injuries are then more frequent. In a large number of the patients, estimated at from 40 per cent. (Angus MacNab) to 75 per cent. (Otto Haab), there are symptoms of lacrymal obstruction; and, as stated before, pneumococci are present in about one-half the cases.

The hypopyon-keratitis of children, as a rule, is a much milder affection, is not associated with dacryocystitis, yields to simple treatment, and seldom entails the loss of an eye. It may, indeed, be doubted if a typical ulcus serpens has ever been observed in childhood (Axenfeld). The starting-point of hypopyon-keratitis in children is nearly always an ulcerated corneal phlyctenule. The breach becomes inoculated with pyogenic organisms, and hypopyon is brought about in much the same way as in adults. At the same time, in my experience, the pneumococcus is often present. Of seven of my own cases the pneumococcus was identified in four instances—twice in pure culture and twice mixed with staphylococcus and the xerosis bacillus. In the remaining three cases the diplo-bacillus of Morax-Axenfeld was present, either pure or with the xerosis bacillus as the only contamination.

The last corneal condition in which pneumococci are not uncommon is known by the name of "keratomalacia"—that is to say, a kind of gangrene of the cornea apt to supervene in young children much enfeebled by wasting disease, as tuberculosis, syphilis, ileo-colitis, and so forth. The pneumococcus has been found in these cases by others besides myself, as v. Hippel, A. Knaebel, and Doetsch. At the same time there is no reason for believing it to be the cause of the disease, which is essentially one due to the lowered vital resistance of the body in general and of the cornea in particular. The pneumococcus may not be present. Other organisms, as staphylococci, streptococci, or

bacillus coli, may be found in the ulcerated cornea. Itseems likely, therefore, that in the special circumstances under which keratomalacia occurs, almost any pyogenic microbe may suffice to produce the corneal mischief.

TRANSLATION.

A CASE OF MIKULICZ'S DISEASE WITH PRONOUNCED TUBERCLE OF THE IRIS.

BY

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[Translation* by PERCIVAL G. HAY, M.D.]

In the *Festschrift* in honour of Billroth, Professor v. Mikulicz described in 1892 a disease up to that time barely known, or at least inadequately observed, which was characterised by a symmetrical affection of the lacrymal and salivary glands. Several papers have appeared since then dealing with this subject, but none of them has cleared up the ætiology of the disease, which is still quite obscure, nor has any light been thrown upon the pathology of this peculiar symptom-complex.

In 1896 Professor Kümmel, at that time lecturer in the University of Breslau, contributed some very interesting observations to the *Mitteilungen aus den Grenzgebieten der Medizin und Chirurgie* (Vol. ii, p. 112) giving details of six similar cases which, by a singular stroke of good fortune, he says, had come under his notice within a comparatively short time. In these six cases he found the greatest variety as regards extent and intensity of the swelling in the different glands. The following is Kümmel's summary of the essential points in the clinical picture: the persons affected are of middle age, more rarely young or of advanced age. The disease is characterised by a homogeneous enlargement of the salivary and similar glands of the head. It develops gradually in the course of months, years, or even decades, giving rise to purely mechanical disturbances and causing no pain, while the general health is but little, or not at all, affected.

As far as we know from clinical experience, the disease may affect several of the glands in various combinations, or it may attack only one or other of them. It is still an open question how it would terminate without treatment, but there have been repeated observations to show that the enlargement of the glands may remain at a standstill for many years, or that it may go on very gradually without exceeding the natural boundaries

* From *Die Ophthalmologische Klinik*, August 5, 1907.

of the glands and without impairing the general health. Complete removal has been carried out, and in a number of cases no recurrence has followed ; partial removal has been followed occasionally by further enlargement. Therapeutic measures of various kinds have proved successful in some instances, unsuccessful in others, although clinically the latter did not seem to differ from the former in any essential particular. As to the cause of the disease, there seems to be some justification for the assumption that the exciting agent reaches the glands by way of the ducts opening upon the mucous membrane.

Mikulicz expressed the opinion that the disease was, in the widest sense, infective or parasitic in origin.

The **pathology of the affection** is a simple one, according to Kümmel. The cause, whatever it may be, leads to the growth of lymphadenoid tissue, often of typical lymph follicles, in the interstitial tissue, while at the same time the latter frequently undergoes hyaline degeneration, which may render it quite unrecognisable. The transformation of the interstitial tissue into lymphadenoid tissue proceeds round the acini as a centre. At a comparatively early date the glandular elements perish, and, finally, nothing remains of the glandular structure proper.

Histological examinations have been carried out by various authors. The first to do so was Arnold, of Heidelberg, who examined a case in which Becker had excised both lacrymal glands. He found that the tumour consisted essentially of lymphatic tissue. Dense masses of lymphoid cells lay sharply outlined in a delicate reticulum, forming a perfect imitation of lymph follicles embedded in a more or less homogeneous structure of diffuse lymphatic tissue. Arnold calls the tumours "lymphadenomas." Microscopic examinations by other authors (Fuchs, Zirm, Kümmel, etc.) of lacrymal and parotid glands have led to similar results.

von Brunn has described two cases of this kind in the *Beiträge z. klin. Chirurgie* (1905). He also believes the clinical appearances to be undoubtedly due to the cellular masses found in the interstitial tissue, and inclines to the view that the condition is one of enormous immigration of leucocytes.

In the **differential diagnosis** we have to consider, in the first place, malignant lymphoma, pseudoleucæmia, lymphosarcoma, and leucæmia.

Mikulicz, in a sense, placed leucæmia and pseudoleucæmia in a parallel with this disease on account of the similarity in the pathological appearances, but he did not include them in his characterisation of the disease, any more than lymphosarcoma or sarcoma. The characteristics given by Mikulicz were :—chronic benign course ; symmetrical enlargement of the lacrymal and salivary glands ; no inflammation ; and no influence

upon the general health. Later authors widened the limits of the symptom-complex as given by Mikulicz. They included, in the first place, cases in which the salivary glands alone were involved and the lacrymal glands were healthy (Kümmel's cases, 3—6); and, in the second place, they counted cases in which a change in the blood was associated with the enlargement of the glands.

von Brunn goes further still. He divides all cases of symmetrical swelling of the salivary and lacrymal glands into two classes: (1) cases with normal characters of the blood; and (2) those with abnormal characters of the blood.

Ranzi looks upon the symmetrical disease of the lacrymal and salivary glands as a purely local affection, and maintains that pseudoleucæmia and leucæmia cannot be grouped with it until a common ætiological factor has been found.

An examination of the blood soon disposes of leucæmia. The other diseases may require observations extending over a considerable period before they can be eliminated. Lymphosarcoma is accompanied by enlargement of the neighbouring and even distant glands—a sign said to be absent in Mikulicz's disease. Many cases, however, seem to occupy an intermediate position between the innocent lymphoid degeneration of the glands and the more malignant affections already mentioned. Tumours occurring primarily in the lacrymal gland are rare, but they are more common in the salivary gland. The bilateral nature of Mikulicz's disease may be sufficient for differential diagnosis.

The histological appearances must be considered very carefully. The giant cells, especially (Tietze), as well as the formation of follicles and the frequent degeneration of connective tissue, it will be readily seen, may easily lead to confusion with tuberculosis. Stains for the tubercle bacillus, however, as well as for other organisms, have always proved negative.

The **prognosis** in Mikulicz's disease seems to be very favourable. The disfigurement, however, and the functional disturbances of the eye, when the lacrymal glands are affected, may be a source of great annoyance to the patient. There may be unpleasant secondary affections of the mucous membranes upon which the ducts open. Thus, in the mouth there may be dryness of the mucous membrane with or without subjective disturbances, sometimes falling out of the teeth; again, in the nose, chronic hypertrophic rhinitis may occur, and is sometimes characterized by great obstinacy; and, finally, the conjunctiva may be subject to acute and chronic catarrhal affections.

As regards **treatment,** various internal remedies have effected a cure or a considerable improvement. Arsenic has been the most successful drug, but the treatment must be pushed and be continued for a long time—and many patients cannot stand this. Potassium iodide and syrup of the iodide of iron, along

with general treatment, have often also given good or satisfactory results. Treatment with X-rays, combined with medicinal remedies, has also been recommended. In view of the opinion that the condition is a lymphadenoid proliferation of the lacrymal and salivary glands, and considering Heineske's experiments upon animals, and our clinical experience in leucæmia, it seemed almost an obvious thing to try the selective action of the X-rays upon glandular tissue. As a matter of fact, quite satisfactory results have been obtained with this form of treatment—*e.g.*, by v. Brunn (*Beiträge z. klin. Chirurgie*, Vol. 45, Pt. II), Pfeiffer (*klin Chirurg.*, Vol. 50, Pt. I), and Ranzi (*Mitteil. aus d. Granzgeb. d. Med. und Chir.*, Vol. 16, Pt. 4 and 5).

It is interesting to note the effect of intercurrent diseases in several instances, *e.g.*, in erysipelas, peritonitis, influenza, and pneumonia, the swellings have undergone a rapid, if not a permanent, diminution in size.

When the treatment with drugs and X-rays fails, the question of removing the glands by operation will need to be considered. Operative interference in the case of the parotid gland does not seem advisable, on account of the intimate relations with the facial nerve, and here, therefore, treatment with X-rays would appear to be more particularly indicated. The absence of recurrences, when the glands are shelled out completely, is another valuable point in the differential diagnosis from lymphosarcoma and pseudoleucæmia.

The case which I bring before you to-day may be of special interest from the fact that there is distinct evidence of tubercle in one eye, along with the symmetrical affection of the salivary and lacrymal glands. The history is as follows:—C. K., an apprentice, aged 19 years, is the son of healthy parents. He has nine brothers and sisters alive and well. Three elder children died in infancy from childish disorders.

Three years ago the patient had an attack of pulmonary catarrh, but otherwise he has always been quite healthy. The present complaint began unnoticed and without causing any trouble. In fact, the patient cannot say even approximately when it commenced.

At the beginning of this year he consulted a doctor for the first time, as he says, for a "sore throat." At that time he complained of dryness of the throat which prevented him from swallowing any dry food without drinking something along with it. His eyes also felt dry; otherwise he did not have anything to complain about, although the enlargement of the glands was as great then as now. The doctor sent him to the surgical side of the Karl-Olga Hospital, where he was treated as an out-patient from April 12 to June 6. He was given solution of arseniate of potash in increasing doses, beginning with two drops three times a day; further, he was treated with X-rays for ten minutes a day. On April 29, after eight exposures, there was no change. For

some days he had been complaining of pain in both eyes, so he was sent to the eye wards of the Catherine Hospital under the charge of Professor Hofmeister.

He came here for the first time on June 8th. Both eyes showed typical irido-cyclitis. In the right eye there were some deposits on the posterior surface of the cornea, but none in the left eye. Dr. Schmidt, the senior surgeon, who was so kind as to make a general examination of the patient, reported: the lacrymal, parotid, both submaxillary and sublingual glands enlarged; right gland of Blaudin (lower surface of the tip of the tongue) palpable, but not the left; palatine glands not enlarged; left accessory parotid enlarged, but not the right one; a few small glands in the neck, especially on the right side; one large

gland in the right axilla, a few small glands in the left axilla; a large gland at the right elbow, a smaller one at the left elbow; inguinal glands enlarged on both sides. The spleen could not be felt. The pulse-rate increased (up to 140); the cardiac dulness not enlarged. In the left lung, behind and above, some crepitations, no dulness; some crepitations occasionally at the right apex. Urine: clear, acid; no albumen, no sugar. Examination of the blood undertaken at both hospitals: no deviation from the normal worth mentioning.

The inflammation in the left eye subsided rapidly under the usual treatment, and had almost disappeared at the end of a fortnight. In the right eye, however, there are still numerous deposits, and in the iris two nodules have appeared, the size of

a pin's head. One, the larger of the two, lies close to the margin of the pupil, the other is in the lower angle of the anterior chamber. Both are quite distinct, of a light yellow colour, and covered with a dense capillary network. In the right eye there is still a broad synechia; the other synechiæ have disappeared under atropine and scopolamine.

R. V. fingers at 2 m. c.—4.5 D. Sph. = 6/18.
L. V. ,, ,, 3 ,, c.—4.5 D. Sph. = 6/7—6/5.

Along with the local treatment, the patient was given iodide of iron, and it seemed to me that under this treatment the swelling of the lacrymal glands became much less, particularly on the right side, although the other glands did not show any marked change.

I intend to have the submaxillary glands removed and examined microscopically, and further to give tuberculin injections for the tuberculous affection of the right eye, and to report the result.

On June 24 the patient was sent to the surgical department of the Catherine Hospital, where Dr. Schmidt removed the glands on the same day. Dr. Walz made a microscopical examination and reported as follows:—in both glands, which to the naked eye appear much indurated, there is chronic interstitial inflammation; there are *numerous tubercle bacilli* with giant cells in the stroma and within the acini.

I beg to thank Professor Hofmeister, Dr. Schmidt, and Dr. Walz for their assistance and kind permission to publish the case.

When the patient came back from the surgical ward, and after "old tuberculin" (0·001) had produced a distinct reaction, we began injections with "new tuberculin" on July 2nd, and continued them in doses increasing from 0·001 mg. to 0·06 mg. until August 6th, when the patient was taken home by the parents, contrary to my advice.

The tuberculin injections had never caused a rise of temperature, nor had they affected the general health. There was no marked change in the eye or glands when the patient left the eye department.

The clinical picture, therefore, which we have before us, clearly shows the symptom-complex of Mikulicz's disease, and at the same time distinct tuberculous disease of the eyes (iris). The microscopic examination of the submaxillary glands shows large numbers of tubercle bacilli and giant cells in the stroma and acini.

Future investigations will need to settle the question, whether this case may serve to illustrate, that tubercle may be the cause of the disease, or that a patient affected with lymphadenoid glands becomes predisposed thereby to tuberculous infection.

CURRENT LITERATURE.

NOTE.—Communications of which the titles only are given either contain nothing new or else do not lend themselves to abstract.

I.—BACTERIOLOGY.

(1) Demaria.—Influenzal conjunctivitis (bacillus of Pfeiffer). (Conjunctivitis por influenza. Bacilo de Pfeiffer.) *Anales de Oftal.*, July, 1907.

(2) Calderaro.—Suppurative metastatic panophthalmitis produced by the staphylococcus pyogenes albus. Bacteriological and experimental investigation. (Panoftalmite metastatica suppurativa da stafilococco piogene albo. (Ricerche batteriologiche e sperimentali) *La Clinica Oculistica*, October, 1907.

(3) Demaria.—Primary marginal ulcer of the cornea. (Queratitis ulcerosa marginal primitiva. Bacilo de Nedden). *Arch. de Oftal. Hisp.-Amer.*, November, 1907.

(4) Hanke, Victor and Tertsch, Rudolf.—Some rare infections of the eye. (Einige seltene Infektionen des Auges.) *Klin. Monatsbl. f. Augenheilkunde*, Dezember, 1907.

(5) Stöwer, P.—A case of corneal ulcer due to pneumobacilli. (Ein Fall von Hornhautulzeration verursacht durch Pneumobazillen). *Klin. Monatsbl. f. Augenheilkunde*, Dezember, 1907.

(6) Tschirkowsky, W.—On a case of atypical hypopyonkeratitis with staphylococcus aureus resembling sarcinæ. (Ueber einen Fall von atypischer Hypopyonkeratitis mit Staphylococcus aureus in Sarzine-ähnlicher Form.) *Klin. Monatsbl. f. Augenheilkunde*, Januar, 1908.

(1) The conjunctival complications of influenza are due to direct infection of the membrane by the bacillus. Sometimes the conjunctival inflammation is the original disease, sometimes the sole infection. The form is an acute catarrhal conjunctivitis; the lids are red and swollen, with free discharge of a serous nature, with flakes of lymph. There is usually blepharospasm and photophobia. The preauricular glands are inflamed and tender. The œdema of the conjunctiva extends to the fornices, and affects the tarsal conjunctiva. The diagnosis from acute Koch-Weeks' conjunctivitis rests on the bacterial examination of the discharge. Occasionally the disease takes on an even acuter form, and may then simulate gonococcal or diphtheritic inflammation. HAROLD GRIMSDALE.

(2) Metastatic panophthalmitis is usually due, nowadays, to some general disease. Antisepsis has largely diminished the cases which formerly followed the puerperium or surgical operations. According to Axenfeld, one-third of all cases occur as a complication of ulcerative endocarditis. In the case which **Calderaro** brings, the primary accident was a small boil on the upper lip. This was followed by other small abscesses about the face, and, finally, by an attack of inflammation of the right eye, which speedily destroyed the sight.

The globe was excised. Examination showed that the choroid and retina were much thickened, and the vitreous was transformed into a yellowish-white mass. From this cultivations were made, and some of the material also was used for experimental investigations in rabbits. The result was to show that the exciting organism was the staphylococcus pyogenes albus. It is, the author states, the first recorded instance of the occurrence of this staphylococcus in metastatic panophthalmitis.

HAROLD GRIMSDALE.

(3) **Demaria** brings forward three cases in which he observed the bacillus described by zur Nedden in causal connection with marginal ulcer of the cornea. He draws attention to the fact that since zur Nedden first described the organism, no other observer has confirmed his observations (*sic!*). Demaria found the bacillus in scrapings from the ulcers, and after cultivating it, produced with the cultivated bacilli similar lesions in animals.

HAROLD GRIMSDALE.

(4) **Hanke** and **Tertsch** record a series of cases interesting on account of the bacteriological findings. The first case was that of a baby with blennorrhœa of moderate severity. The microscopical examination of the discharge, which had a strikingly yellow colour, proved practically negative, only very few Gram-negative bacilli being found. But by means of cultures and inoculations of animals, the presence of the bacillus pyocyaneus was ascertained. It is the first time that this micro-organism has been proved to be the cause of blennorrhœa neonatorum.* Metastatic choroiditis and abscess in the vitreous occurred in the eye of a child, aged seven months, eight days after the onset of symptoms of what was probably a mild cerebro-spinal meningitis. The abscess perforated the sclerotic. The microscopical examination of the discharge was negative, but elaborate culture-tests led to the determination of meningo-cocci. The authors give an exhaustive survey in a tabulated form of the rather subtle differences in the cultural properties of the gonococcus, meningococcus, and micrococcus catarrhalis. Metastatic choroiditis occurs in about four to five per cent. of cases of epidemic cerebro-spinal meningitis (Uhthoff), but spontaneous perforation of the abscess is a very rare event. The

*The bacillus pyocyaneus has been found in cases of ophthalmia neonatorum by v. Herff, G. S. Derby, and S. Stephenson,—EDITORS.

third case was one of hypopyon-keratitis. A thorough bacteriological investigation revealed, apart from streptococci, the presence of bacillus proteus vulgaris. The latter is of very rare occurrence in ulcus serpens, and was further distinguished in this case by an unusually high degree of virulence in animals. The last observation was one of panophthalmitis setting in rapidly after the penetration of a piece of iron into the eye. Enucleation was performed. Numerous Gram-negative bacilli were found in sections of the eye and in pus taken from the vitreous. But their identification was not possible, since hardly any growth occurred in various culture media. C. MARKUS.

(5) **Stöwer's** case was that of a workman whose cornea had been injured by a piece of wire. An ulcer of a non-purulent character supervened, with evenly grey infiltrated margins and a gray disc-like opacity in the deeper layers of the corinea. The bacteriological examination determined pneumo-bacill. to be the infective agent. The disease took a favourable course

C. MARKUS.

(6) **Tschirkowsky** observed in the *Klinik* at Freiburg a case of hypopyon-keratitis, in which, after a Saemisch operation, the whole disc-shaped infiltrated part separated from the cornea, thus forming a hole, the size of a lentil, in which lens and iris were exposed. The defect was covered by a conjunctival flap, and iridectomy performed. In the conjunctival discharge and material from the ulcer, staphylococci were found in great number. They varied considerably in size, and in some cases were big and arranged in tetrads, so as to suggest a mixed infection of staphylococci and sarcinæ. Culture tests, however, proved the case to be one of pure staphylococcal infection. The staphylococcus aureus assumed in decoctions of hay the same sarcinæ-like formations as in the eye. Reference is made to similar observations on the varying morphological aspects of staphylococci, particularly the forms approaching sarcinæ.

C. MARKUS.

II.—THE CORNEA.

(1) **Brady, George T.—Primary epithelioma of cornea.** *Ophthalmic Record*, September, 1905.

(2) **Demaria.—The importance of traumatism in determining an attack of interstitial keratitis. (Importancia del traumatismo en la queratitis intersticial.)** *Anales de Oftalmologia*, May, 1907, and *Arch. de Oftal.*, August, 1907.

(3) Reis, Wilh.—Contributions to the histopathology of the diseases of the corneal parenchyma. (Beiträge zur Histopathologie der parenchymatosen Erkrankungen der Cornea.) von Graefe's *Archiv f. Ophthalmologie*, Bd. 66, ii, 16 Juli, 1907.

(4) Armaignac, H.—Regeneration of the cornea after infective ulcerations and total destruction of the membrane. (La régénération de la cornée à la suite des ulcérations infectieuses et de la destruction totale de cette membrane.) *Bull. et Mém. de la Société française d'ophtalmologie*, T. XXIV, 1907, p. 218.

(5) Bonte.—Peculiar course taken by a burn of the cornea with quick-lime. *La Clinique Ophtalmologique*, avril 10, 1907.

(6) Stephenson, Sydney. — Interstitial keratitis from a modern standpoint. *Medical Press and Circular*, December 25th, 1907.

(7) Shoemaker, W. A.—An unusual case of parenchymatous keratitis. *American Journal of Ophthalmology*, December. 1907.

(8) Leplat, L.—Parenchymatous keratitis of traumatic origin. (Kératite parenchymateuse d'origine traumatique.) *Bull de la Société belge d'ophtalmologie*, No. 22, 1907.

(1) Brady's case is of value as having developed in an uninjured cornea without any evidence that it had ever involved the limbus.

The patient, a healthy Irish-American teamster of 42 years of age, was first seen in 1893, at which time there was a pearly nodule of pinhead size occupying the middle of the superior temporal quadrant of the right cornea. Medical advice was sought in 1900, because the growth, in addition to obscuring vision, occasioned considerable pain at the beginning of every month. The patient's mother, father, two brothers, and one sister had died of tuberculosis, he being the last living member of the family. On the temporal half of the cornea of the right eye "a broad, irregularly, hour-glass shaped, grayish-white, rugose, sessile mass elevated five-tenths = seventy-five hundredths millimeters" could be seen. It was everywhere surrounded by clear cornea, except a small portion of its mesial aspect, which showed an infiltration for a distance of one millimeter. Its nearest approach to the limbus of the cornea was one millimeter. At its isthmus, it was broad, and increased to four millimeters in breadth at both poles. From the marginal plexus a few adventitious twigs penetrated the surface of its lower half. The conjunctiva was not inflamed. The other parts of the eye were normal. Under atropine, vision of the eye equalled

twenty-fiftieths of normal. There were not any palpable preauricular nodes. A tentative diagnosis of papilloma was made, and the lower half of the growth was excised by the aid of a cataract knife. After fixation in formalin, serial sections were made in various places. There was a close arrangement of typical epithelial cells with large, clear, vesicular nuclei. These were arranged in strands invading the underlying propria. The anterior limiting membrane had entirely disappeared where the epithelium dipped deeply into the propria; a zone of marked lymphocytic infiltration was noted. Many of the sections exhibited typical pearl formation. Nowhere could a fibrous core occupying the centre of the epithelial masses be found. Active mitosis was seen in many cells. No parasitic inclusions were found. Bacterial stains were negative. A diagnosis of papillary epithelioma was made, but the patient declined further operative interference. C. A. O.

(2) **Demaria** gives two cases in which interstitial keratitis followed injury in apparently causal relation. In one case the patient was the subject of hereditary syphilis (and this has been noted in other cases, so that the effect of injury is here acknowledged), in the other, tubercle was probably the prime cause. Demaria thinks that trauma is probably more commonly than we admit the exciting cause of such attacks.

HAROLD GRIMSDALE.

(3) **Reis'** paper refers to the anatomical examination of three eyes, the first two of which belonged to a child born alive towards the end of the eighth or beginning of the ninth month of gestation from a syphilitic mother, who died immediately afterwards. The macroscopic changes were fairly similar in both eyes: a thick annular opacity in the corneal parenchyma of greyish yellow, abscess-like colour, of about 2 mm. breadth and distant about 1 mm. from the limbus, the central portions of the cornea being but slightly greyish, more so in the right eye. Histologically, the affection proved to be of a distinctly inflammatory character, accompanied by similar, but less conspicuous, changes in the anterior uveal tract. Within and centrally from the annular opacity the corneal epithelium was replaced by a single layer of flat cells, which Reis considers due to reproduction after previous shedding. Within the parenchyma the changes were more marked in the superficial, and, again, in the deepest layers. They consisted of infiltration with leucocytes, proliferation and also degeneration of the fixed cellular elements (hyperchromatosis, karyolysis, and pyknosis) partly proceeding to local necrosis. With regard to the aetiology of the process, the author feels inclined to assume an exogenous origin, due to infection of the cornea, when stripped of its epithelium, from the amniotic fluid. The special note must be seen in the syphilis of the mother, and Reis, who could find numerous spirochæta pallida in the

intestinal organs of the fœtus is prepared to see in them the actual originators, although he could not find any in his corneal sections, owing, as he thinks, to his methods of preparation. He terms the process "Infiltratio Corneæ Parenchymatosa Annularis congenita"—but quite distinct from the keratitis annularis of Vossius—and considers the infiltration in his case parallel to Leber's immigration zone in septic infiltration. This case is certainly very important, as autopsies in parenchymatous affections are naturally very rare, and a similar case has never been examined previously. Reis's third case occurred in a mature fœtus suffering from internal hydrocephalus, where perforation had to be resorted to. Only one eye was affected, showing a crescent-like opacity in the lower half of the cornea, which gradually thinned towards the upper part, and was divided from the limbus by a narrow clear zone. The anatomical examination revealed genuine interstitial inflammation in comparatively superficial layers. The ætiology of this case remains, however, rather obscure. R. GRUBER.

(4) **Armaignac** (Bordeaux) incidentally discusses the treatment of septic ulcerations of the cornea, and then passes on to describe a phenomenon that he has had several opportunities of observing—namely, the total or almost total regeneration of a cornea more or less completely destroyed as the result of such ulceration. The rapid regeneration of the corneal epithelium, of course, is proverbial, but if the substantia propria be injured, the processes of repair invariably entail a blemish, which, in general, is smaller than the causative ulcer. Thus, it is not uncommon to see a loss of substance involving even one-third or one-half of the cornea produce a scar of almost insignificant dimensions. In infective ulcers the favourable result is likely to be seriously compromised by anterior or posterior synechiæ. In the cases described by Armaignac, it is significant that Descemet's membrane remained intact or nearly intact. Be that as it may—and it is a point on which the author lays stress—some days after the cornea has been completely destroyed, Armaignac has seen a transparent zone form around the scleral circle. This zone has become bigger day by day, and at the end of three or four weeks has formed a new cornea, having the dimensions of its predecessor and formed of tissue almost completely transparent. The practical conclusion is, that whatever means be employed to arrest the ulceration, they should always be such as will spare Descemet's membrane as much as possible.

SYDNEY STEPHENSON.

(5) **Bonte** describes an interesting case in which a plasterer, after getting quicklime into his eye, remained comparatively well for over a fortnight. Then the corneal epithelium became formed into a false membrane, and after a month longer this had completely separated, "leaving a vast central ulceration." A little more than a month later still there only remained "a

transparent enough leucoma in the lower region of the cornea" to indicate that the eye had suffered injury. It is unfortunate that the visual acuity is not stated. ERNEST THOMSON.

(6) Interstitial keratitis, according to **Stephenson**, is not exactly a common disease. Among 5,142 eye patients seen by him at the North-Eastern Hospital for Children, London, 49, or 0·95 per cent., were affected. With regard to cause, among 101 personal cases, the author found that 70, or 69·3 per cent., were due to inherited syphilis; 10, or 9·90 per cent., to tuberculosis; and 4, or 3·96 per cent., to acquired syphilis. Instances of interstitial keratitis due to acquired syphilis in children are mentioned. Stephenson considers that the available evidence points in the direction of the keratitis being due to an anterior uveitis, and on that view explains some of the clinical associations of the ailment, such as hypopyon, hyphæmia, scleritis, keratitis punctata, iritis, and choroiditis. Ulceration of the cornea was noted in 4 of 97 of the author's cases—*i.e.*, in 4·12 per cent. In one instance ulceration was preceded by the formation of a bulla on the cornea. He reports briefly the details of a case in which an interval of seven years elapsed between the attacks of the keratitis in the two eyes. Four-fifths of his cases occurred between the ages of 5 and 15 years, the greatest incidence (39·18 per cent.) being between the ages of 5 and 10 years. His series included one patient who developed the disease at the age of 36 years. Of all cases, 38·14 per cent. occurred in males, and 61·86 per cent. in females. Arguing from the known facts regarding the distribution of the treponema pallidum, Stephenson expresses a confident opinion that the keratitis is due to the lodgment and multiplication in the cornea of that parasite, probably derived in the first instance from the uveal tract. He points to the analogy between the interstitial keratitis found in dogs and goats affected from trypanosomiasis and that in human beings suffering with syphilis. The former affection has been found by Morax and by Stock to be due to the growth of the parasite of sleeping-sickness in the interlamellar spaces of the cornea. As regards recurrences, Stephenson had such in 22 per cent. of his cases, many of which remained under observation for long periods. He believes that recurrences are commoner in cases treated without than with mercury, and that they are more difficult to manage than the original attack. Stephenson recounts several cases where the determining cause of the keratitis appeared to be traumatism, or the lowered vitality due to some recent illness, such as typhoid fever or influenza. Lastly, he describes the production of experimental interstitial keratitis by the inoculation of animals' eyes with syphilitic material.

(7) **Shoemaker's** case of unilateral interstitial keratitis occurred in a married woman, 33 years of age, whose incisor teeth were suggestive of a syphilitic inheritance. The cornea was transparent, with the exception of an interstitial deposit

(3 mm. by 5 mm.), which ultimately travelled entirely across the cornea, always remaining about the same size. The vitreous was hazy, and there were two small peripheral deposits of choroido-retinitis. Such symptoms as redness, lacrymation, and photophobia were conspicuous by their absence. Eventually the cornea recovered its transparency, and corrected vision reached 18/24.

(8) **Leplat** (Liège) describes one of those cases, important from the compensation standpoint, where a local injury determined an attack of interstitial keratitis. The patient, a collier, was struck in one eye by a splinter from his pickaxe. The colliery surgeon extracted the bit of metal, but left behind some rust, which a workman tried to remove with a piece of wood but failed. When seen by Leplat, nine days after the injury, an infiltrated ulcer, 2 mm. in diameter, lay at a distance of 1 mm. from the limbus in the lower-inner part of the cornea. No evidences of syphilis or "scrofula" could be made out. The ulcer was treated on two occasions with the galvano-cautery. Twenty-four days after the patient's reception, an interstitial infiltration made its appearance around the central aspect of the ulceration. The latter healed within the next five days, but the infiltration, on the contrary, had extended to the centre of the cornea, and a leash of deep vessels passed to it and under the ulcer, a point on which the author lays stress as some evidence of the interstitial nature of the corneal disturbance. Eventually, the entire cornea became opaque and vascular. It then began to clear little by little until at the date of reporting V. had reached 5/10. The second eye remained free from mischief. In the discussion that followed the reading of Leplat's communication, analogous cases were mentioned by Stocké (Ghent), Brandes (Antwerp), v. Duyse (Ghent), and Terlinck (Brussels). SYDNEY STEPHENSON.

III.—MIRROR WRITING.

(1) **Pendred, Vaughan.—A case of mirror writing.** *Lancet*, January 4th, 1908.

(2) **Hughes, Edmund.—Mirror writing.** *Lancet*, January 18th, 1908.

(1) **Pendred** reports a case of this very interesting condition in a boy of six years. From a copy the child could write correctly, but if writing on his own account or to dictation he always began at the right-hand side of the paper and wrote backwards. Though able to read either kind of writing fluently, he considered reversed caligraphy to be correct The author

speculates very briefly on the central cause of mirror writing, but the subject is one which stands in need of further investigation. It is not stated whether the boy was left-handed.

(2) Referring to Pendred's case, **Hughes** gives his experience as a subject of this condition. Originally left-handed, he was able, when first taught, to write with the untaught left hand the reverse way more easily than he could write correctly with the right hand. The tendency to mirror writing with the left hand was repressed and almost forgotten until college days, when, hampered as he had always been by the failure of the right hand to quickly follow the thoughts, Hughes began mirror writing with the left hand, and produced, without any further practice, a neat, elegant writing, which, however, he could not read without a mirror. The hand followed the thought very much better than the trained right hand. For ten years he has continued using "this unsought accomplishment" on transparent paper. The author considers that during the period of education of the left cerebral centres, those on the right were secretly profiting.

ERNEST THOMSON.

IV.—THE TABETIC EYE.

Massia and **Delachanal.—The tabetic eye. (L'œil tabétique.)** *Gaz. des Hôpitaux*, janvier, 1908, No. 1 et 4, pp. 3 et 39.

This is a useful classification and general review of the various ocular affections found in tabes. It is, however, very incomplete, as may be judged by the fact that more than four-fifths of the references are French, while much of the excellent work recently done on the subject in Germany is not considered. A great part of the review is of an elementary character, concerned with, for instance, such matters as the distinction between homonymous and heteronymous diplopia, and so need not be referred to here.

The main points that the authors insist on are the following :—

A.—Motor Troubles.

(a) *Extrinsic.*—Oculo-motor paralyses occur in nearly half the cases. They affect most often the levator palpebræ superioris and the external and internal recti. They can be divided into (1) paralyses of onset, characterised by sudden onset, short duration, complete recovery, and absence of pain. (2) Late paralyses which differ in being more often total and complete, in having a gradual onset and hopeless prognosis. They are rarer than the first.

Diplopia is the sole direct symptom and often leads to headache, giddiness, and vomiting. The differential diagnosis

is discussed, a number of causes of strabismus being mentioned, but the chief affection that gives rise to difficulty in this connection—insular sclerosis—is not referred to. The pathology, especially of the early cases, is obscure. Sympathetic paralysis occurs occasionally.

(b) *Intrinsic.*—The various affections of the iris are described. The authors state that myosis is rarely found with any other ocular symptom, except, of course, the Argyll Robertson pupil. Mydriasis is found most often with pupillary atrophy, sometimes with internal ophthalmoplegia, and occasionally as the sole ocular sign. Anisocoria usually coexists with other pupillary asymmetry, particularly differences in the promptness of the reaction in the two eyes; most often it is the smaller pupil which is the abnormal one. Pupillary irregularity occurs most often; in cases with mydriasis it is an early and frequent sign.

Atrophy of the iris, either local or general, is commoner than generally thought. It is preceded by the Argyll Robertson sign, but loss of the accommodation reflex and of Galassi's reflex (pupillary contraction on closing the eyelids) are subsequent to its appearance. The ciliary muscle may show spasm, simulating myopia, or, more frequently, paralysis.

In taking the Argyll Robertson sign, it is advisable to employ a lens or a strong light, and, if the pupil be very small, an instillation of cocain. When the sign is unilateral, the pupil concerned reacts neither to direct nor to consensual stimulation; the opposite pupil, on the contrary, reacts both directly and consensually. This fact excludes a lesion in the centripetal path. The sign may be intermittent rarely and may disappear during the gastric crises (?). Erb's sign (abolition of the pupil reaction to pain), Gower's sign (reaction to light by oscillatory movements), and Pilcz's sign (pupillary contraction on closing the eyelids, followed by instant dilatation on opening them), are of little value.

B.—Sensory Troubles.

Deep and superficial hyperalgesia and hypoalgesia occur, but are of no value in diagnosis.

C.—Trophic Troubles.

Symptoms secondary to trigeminal affection are uncommon, and not peculiar to tabes. Dacryorrhœa and epiphora are of a similar nature to sialorrhœa, hyperhydrosis, etc. Papillary atrophy is found in from 10 to 30 per cent. of tabetics, and in more than two-thirds of the cases in which it occurs, it is an early symptom. The retinal origin of the atrophy, accepted till of late, has been disproved by Wéri, who finds evidences of

chronic proliferative inflammation in the nerve. The ophthalmoscopic picture is usually one of simple atrophy, occasionally of hyperæmic neuro-retinitis.

Blindness may occur as a transitory phenomenon, akin to the transitory paralyses. Usually, however, it is of gradual onset, and steadily progressive, its evolution being completed, on an average, in three years. Its monocular character is a distinguishing feature. Dyschromatopsia is the first sign, sensation for green, red, yellow, and blue disappearing in this order. Most usually visual acuity diminishes equally over the whole visual field; often, however, a concentric contraction occurs. Occasionally sectors may be found; in such cases the resemblance to true hemianopsia is always incomplete, inasmuch as the border of the scotoma is not regular. Central vision, especially for bright light, is often preserved for a considerable period. Central scotoma occurs in 2 per cent. of the cases, but even then some peripheral defect will be found over certain areas; this is independent of tobacco and alcohol, and is of hopeful prognosis. Hemeralopia is rare; diminution of light chiefly embarrasses the distinguishing of colours.

The authors uphold the common view as to the relative independence of the pupillary and the spinal symptoms.

ERNEST JONES.

V.—RETINITIS PUNCTATA ALBESCENS.

Duyse, van.—Three cases of retinitis punctata albescens. (Trois cas de rètinite ponctuée albescente typique et familiale.) *Archives d'ophtalmologie*, août, 1907, and *Bull. de la Société belge d'Ophtalmologie*, No. 22, 1907, p. 37.

Of the various familial affections of the eye few are more interesting or more obscure than the disease christened "Retinitis punctata albescens" by Mooren in 1882. In this country such cases have been described by Nettleship (*Transactions of the Ophthalmological Society*, Vol. VII (1887), p. 301, and Vol. VIII (1888), p. 163) under the name of "Permanent partial" or "Stationary night-blindness, with minute white spots at the fundus," and in the last-named volume (plate vii) an excellent ophthalmoscopic picture is given of the condition. The disease is characterised by a multitude of tiny white dots disseminated over the fundus oculi, so that the latter looks almost as if it had been snowed on. The retinal changes may remain without obvious alteration for long periods of time. The visual acuity is reduced, and a striking feature is the existence, often from infancy, of night-blindness. As regards its symptoms, the

disease, which is apt to affect several descendants of parents who may be connected by ties of blood, has close affinities with retinitis pigmentosa.

van Duyse (Ghent) after referring to some of the observations mentioned in literature, reports three instances of this peculiar form of retinitis, occurring in three members of one family, of which the father, mother, and three other children, aged respectively 19, 18, and 7 years, were healthy. The parents, who were not connected by consanguinity, manifested no evidences of syphilis.

The three cases are briefly abstracted below :—

Case No. 1.—Joséphine ———, 20 years. Pupils, 4·5mm. "Floaters" in right vitreous humour. V. = fingers at 2 to 3 metres. In good daylight, visual field contracted, especially in upper part. Unable to find her way about in the dark since she was two years of age. The light-sense was so reduced that it could not be estimated by Förster's photometer. Slight horizontal nystagmus. Aside from minor points, the fundi (described at considerable length by van Duyse) showed innumerable white spots, better seen by the direct than by the indirect method of ophthalmoscopic examination. The retinal vessels lay anterior to the spots, which could be seen, however, to lie in front of the choroidal vessels and of the inter-vascular choroidal spaces. The white spots were often agminated, like bunches of grapes, covering almost completely certain of the inter-vascular choroidal spaces. Here and there between the retinal spots sparkling points, possibly cholesterin or calcareous crystals, could be recognised. The optic discs were yellowish-white, with a pinkish tinge. Retinal arteries reduced in calibre. Retinal veins presented no noteworthy modification. No posterior polar cataract.

Case No. 2. Auguste ———, 12 years, the inmate of a blind asylum, had manifested marked crepuscular blindness since he was 4 or 5 years old. The visual field of the left eye was contracted to 10° in all directions; that of the right eye to 5° externally, to 6° above, to 6° internally, and to 10° below. Oscillatory nystagmus. Light-sense so small that it could not be estimated in the usual way. Sight (myopic astigmatism corrected) = 1/8. The fundus changes, aside from slight differences as regards dimensions of the retinal spots and the presence of hyaline changes, were like those of his sister Joséphine.

Case No. 3.—Raymond ———, 5 years, an inmate of the same institution that sheltered his brother Auguste. Marked crepuscular blindness since the child learned to walk. Visual field contracted concentrically. Horizontal nystagmus. Compound hypermetropic astigmatism with the rule. The white spots were especially abundant towards the periphery of the fundus. Optic disc as in Joséphine. Some of the choroidal vessels were sclerosed.

van Duyse then goes on to analyse the ophthalmoscopic appearances of retinitis punctata albescens as noted by himself and by some other authors. The *optic disc* has been declared to be "reddish," "pallid," "badly defined," and "waxy-looking." The *retinal vessels* have been described as "small," "full," or as provided with a hyaline sheath. As regards the *white spots* in the fundus, they have been characterised as "round and brilliant," and as having, when seen by the direct method, jagged edges (Gayet); as having the diameter of a retinal artery of the second order (Fuchs); as having a diameter once, twice, or thrice that of the retinal vessels, and as being more easily seen by the upright image (Liebrecht); as one-half the diameter of the macular vessels (Spengler); as difficult to recognise by the inverted image, and as being larger towards the periphery of the fundus (Wüstefeld). As regards the

distribution of the spots, the latter are said by Gayet and Liebrecht to be smaller and less frequent towards the periphery of the fundus, by Fuchs to be absent from the periphery, and by Spengler to be more abundant in the macula than elsewhere. In all of van Duyse's patients the macular region was less affected than the other parts of the fundus. With regard to the situation of the spots, there exists considerable divergence of opinion. Gayet believed them to lie at the level of the internal limiting membrane and of the epithelial cells; Spengler in the epithelial layer and chorio-capillaris; Wüstefeld in the layer of large choroidal vessels; Qurin in the vascular layer of the retina, immediately beneath and at the sides of the vessels; Pagenstecher in the lamina vitrea of the choroid; Liebrecht in the external layers of the retina, between the vessels and the pigmentary layer. The exact position of the spots, however, is still uncertain, inasmuch as such eyes have yet to be examined histologically. *Yellow spots alongside the vessels and hyaline sclerosis.*—In Spengler's case white streaks accompanied the choroidal vessels, but such changes were not present in van Duyse's patients. On the other hand, in the last-named there were clear yellowish spots, larger than the white spots, of ill-defined outline, such as Spengler believed to lie in the intervascular spaces. These spots corresponded in position to the places where the choroidal vessels were in a state of hyaline degeneration, and they were especially prominent on the large vessels of the periphery.

Recent researches have shown that the changes of retinitis pigmentosa are consecutive to a primary pathological alteration of the chorio-capillaris. Between that disorder, on the one hand, and retinitis punctata albescens, on the other, there exist, as already stated, ties of close affinity. Gayet, who believed that the lesions were situated at the level of the epithelial cells of the retina and of the internal limiting membrane, evoked in explanation a process, in virtue of which the pigment disappeared without first being able to migrate to other parts, and in which a glistening white aspect thereby replaced the black deposits characteristic of retinitis pigmentosa. Gayet further held that the migration of the pigment in pigmentary retinitis was purely contingent. In reference to this view it may be noted that pigment was absent from the epithelial layer of the retina in van Duyse's first two patients (Joséphine and Auguste), who, besides, presented the same marbled aspect of the fundus as was present in the mother and sister, whose eyes were free from retinitis. van Duyse is of opinion that the defect in sight, the dyschromatopsia, and the contraction of the visual field, observed in his cases, point to the existence of atrophic lesions of the external neuron of the retina. The retinal torpor and the crepuscular blindness might depend in great measure

on alterations in the pigmented epithelium, and thus on impediments to the production of the visual purple. In his cases sclerosis of the retinal and choroidal vessels could be recognised with the ophthalmoscope. The visible sclerosis of the small choroidal arteries affords the explanation of the degeneration of the external layers of the retina, as betrayed by the clinical signs; that is to say, if one decide to locate the white spots at this level. van Duyse, as a working hypothesis, believes it to be justifiable to speak of a retinitis punctata albescens as produced by a chronic choroido-retinitis. Heredity plays as great a part in retinitis pigmentosa as in retinitis albescens, and in both affections the methods of transmission are analogous. In v. Duyse's patients there was no history of consanguinity, although that factor has been evoked in explanation of cases by Gayet, Fuchs, Spengler, Qurin, and Galezowski. There remained, however, the family predisposition which resulted from the same constitutional defect affecting the parents without blood-relationship. The hypothesis of "convergent heredity" may be evoked in explanation of the condition. With regard to the determining cause of the vascular modifications, that must be sought in a constitutional vice, a blood dyscrasia acting like syphilis, producing in the course of gestation the primary lesions of vascular degeneration. *Qui est in utero, pro jam noto habetur.*

The references appended by v. Duyse to the important communication, imperfectly analysed above, are as follows:—

1. Mooren.—*Fünf Lüstren*, etc., p. 161, 1882.
2. Gayet.—*Arch. d'ophtalmologie*, 1883, p. 385.
3. Landesberg.—*Centralbl. f. prak. Augenheilkunde*, September, 1883.
4. Nettleship.—Ref. in *Jahresb. f. Ophth.*, 1887, p. 90.
5. Fuchs.—*Arch. f. Ophth.*, Bd. XXXIX, III, p. 278, 1893.
6. Liebrecht.—*Klin. Monatsbl. f. Augenheilk.*, Bd. XXXII, p. 169, 1895.
7. Fuchs.—*Arch. f. Augenheilkunde*, Bd. XXXII, p. 111, 1896.
8. Wüstefeld.—*Zeitsch. f. Augenheilk.*, Bd V, 2, p. 110, 1901.
9. Spengler.—*Ibidem*, Bd. V.I, 4, p 285, 1901.
10. Qurin.—*Klin. Monatsbl. f. Augenheilk.*, 1904, 2 p. 19.
11. Galezowski.—*Recueil d'ophtal.*, December, 1904.

SYDNEY STEPHENSON.

VI.—ANTHRAX OF THE EYELID.

Morax.—On the prognosis of malignant pustule of the eyelids. (Le prognostic de la pustule maligne des paupières.) *Ann. d'oculistique*, T. CXXXVIII, p. 338, novembre, 1907.

Morax (Paris) records the case of a wool comber, aged 24, who had suffered for two days from hard œdema of the left upper eyelid without any other symptoms. At the end of that time the

œdema spread to half his face, while the typical appearances of malignant pustule developed on the eyelid. Repeated injections of a solution of iodine, 1 grm., and KI, 2 grm., in water 100 grm., were made, under ethyl chloride anæsthesia, over all the œdematous region, as much as 5 c.c. being used at one time, and six drops of tincture of iodine were administered internally, at first every hour and later at increasing intervals. On the seventh day, after a period of delirium and pyrexia, the temperature suddenly fell, and it seemed that healing had definitely commenced. On the tenth day, however, in spite of frequent cleansing of the mouth, a putrid phlegmonous inflammation of the cheek, due to anaërobic infection, developed, starting from an ulcer of the buccal mucous membrane caused by a carious tooth. This necessitated numerous incisions and extensive drainage from the orbit to the lower border of the inferior maxilla. After elimination of a palpebral anthrax slough and of the subcutaneous tissue, which had become necrosed during the phlegmon of the cheek, healing became complete. The cicatricial retraction of the upper lid was corrected by blepharorraphy followed by an autoplasty with pedunculated flap.

The diagnosis, at first difficult, was facilitated by the direct examination of serum taken from the surface of the eyelid. No bacilli were found in smears or cultures of the œdematous fluid from the peripalpebral region or in cultures of venous blood taken from the bend of the elbow, showing that, in spite of the gravity of the reaction, the infection had remained local.

When considering how much of the good result in his case was due to the treatment adopted, Morax was struck with the resemblance between it and a case recently reported by Ménétrier and Clunet,* in which the cure was attributed to the influence of injections of anti-anthrax serum. In both cases, after a progressive development of the œdema and general symptoms, the temperature fell on the sixth day, and on the seventh and eighth day, there was a definite local improvement. These two cases, together with a third, in which a patient came under treatment for cicatricial ectropion following anthrax, led Morax to institute an investigation of the published cases of malignant pustule of the eyelid, with a view to ascertaining what proportion of them had proved fatal. This showed that of 50 cases, only 15 (*i.e.*, 30 per cent.) proved fatal. This mortality compares favourably with that of 50 per cent. admitted by most authors in anthrax of the limbs. If, however, all cases in which a bacteriological examination was not made are excluded, only 10 remain, of which five were fatal, and five ended in recovery, thus giving a mortality exactly equal to that which obtains when the limbs are the seat of the disease.

* *Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris*, No. 1, 1907, p. 37.

The author therefore concludes that, contrary to what one would expect from the elevated temperature, delirium, and disfiguration of the patients, the prognosis of malignant pustule of the eyelids is not worse than that of the disease in other cutaneous situations, and in spite of the extension of the œdema, the infective focus appears limited, and usually remains confined to the skin. R. J. COULTER.

VII.—CHLOROMA.

Merrill, C. S., and Bedell, A. J.—Chloroma, with special reference to the ocular symptoms. *New York State Journal of Medicine*, October, 1907.

Merrill and **Bedell** report the fourth case of chloroma diagnosed during life. Briefly, the facts are as follows :—

A boy, aged 8 years, admitted December 3rd, 1906. Patient extremely emaciated. His right eye was proptosed 11 mm. A firm tumour extended from the outer to the inner canthus. Two small subconjunctival hæmorrhages near limbus on outer side. Optic neuritis, together with white exudations along the larger retinal vessels. V. fingers at six feet. Complete ophthalmoplegia externa. The left eye was proptosed 20 mm. Temporal, frontal, angular, and supra-orbital veins distended and tortuous. A firm, non-adherent, freely movable growth projected from beneath the upper margin of the orbit. Complete ophthalmoplegia. Conjunctiva chemotic, with numerous ecchymoses. Lower half of cornea covered with dried yellowish exudation ; lids could not be closed. A yellowish-grey reflex could be obtained from the depths of the vitreous, but no details of the fundus could be made out. V. no perception of light. The general condition of the child was bad. He was more or less unconscious. Muco-purulent discharge from nose ; sordes about mouth. Urine contained a trace of albumen. Examination of the blood showed 1,410,000 red cells, 79,600 white cells, and 30 per cent. hæmoglobin. An incision, 3 cm. long, was made over the outer half of the left orbit, and the last-named was found to be filled with a greenish mass of almost cartilaginous consistence, of which several particles were removed. The histological report, furnished by R. N. Pearce, of the Bender Laboratory, was chloroma. The patient's condition grew progressively worse. The left cornea ulcerated. The glands of the neck became greatly enlarged. Eventually, he died after a fit of convulsions, followed by paralysis of the left side. Autopsy was not permitted.

Merrill and Bedell conclude with the following enumeration of the ocular signs and symptoms of chloroma :—

Exophthalmos was the most common symptom. In some cases — as, for example, Rosenblath's — it was so extreme that both globes were literally on the cheeks. Tumours involving the orbit ranged from small, smooth palpable masses not attached to adjacent tissue to firm growths replacing all orbital structure. The temporal veins were usually found dilated.

The lids, in some cases, were œdematous, puffy, swollen, everted, infiltrated with large movable tumor masses or with smooth swelling, not adherent to the skin. Loss of motility varied from the paralysis of a single muscle to total ophthalmoplegia. The conjunctiva has been reported as being anæmic, congested with venous dilatation, brown infiltration, green

discoloration, invaded by a fleshy translucent growth with ramifying vessels, or bloody effusion with fatal hæmorrhage. Optic neuritis was present in at least ten cases, but often ocular histories are omitted, so that doubtless many others have been observed. If the patient has lived long enough, optic atrophy has followed. Other conditions have been pale nerves, exudation in nerve-head, and hæmorrhage into the nerve tissue. In all extreme grades, the cornea was opaque because of the proptosis, and in some cases completely lost. Numerous hæmorrhages, from minute spots to large linear extravasations, have been noticed in the retina. The vessels have been described as pale, rosy, or distended and tortuous ; most often venous stasis is present.

The sclera has been pale, and in another case hæmorrhages were found in the scleral tissue.

The vitreous was only examined once, and was then normal. Subcutaneous hæmorrhages were seen in and about the eyelids ; chemosis, photophobia, tenderness of the eyeballs, and pain in the eyes, have all been mentioned. T. G

VIII.—TRACHOMATOUS ENTROPION.

Cange, A.—The pathogenesis and radical cure of trachomatous entropion of the upper eyelid. (Pathogénée et cure radicale de l'entropion granuleux de la paupière supérieure.) *Revue générale d'ophtalmologie*, 30 juin, 1907.

This is a clearly-written lecture by **Cange,** of Algiers, full of cheerful words on a subject which, by many of us in this country, is regarded with little cheerfulness enough. The article is rather a long one, and perhaps the best idea of it, short of reading it in the original, may be obtained in the author's summary somewhat extended by the reviewer.

In the genesis of trachomatous entropion there are three elements, namely (in ascending order of importance) the muscles the mucous membrane, and the tarsus. The muscle only acts in an accessory or transient manner in that its spasmodic contractions aggravate pre-existing lesions. The mucous membrane is altered both as regards epithelium and corium. The epithelium, normally cylindrical, becomes stratified squamous, and studded with retractile islets, which have resulted from the cicatrization of follicular ulcers. The corium is the seat of a true sub-epithelial cirrhosis brought about by induration of the trachomatous nodule and by internodular sclerosis. The tarsus, again, is invaded by direct propagation or by ascending Meibomian infection. It is not always changed in one particular way ; there are three main kinds of alteration, namely, of

curvature, of form, or of consistence. For the first, tarsotomy pure and simple is suitable; for the second, partial wedge shaped excision, or, better still, total wedge-shaped tarsectomy. Marginoplastic operations, such as those of Gayet, Truc, and others, should be reserved for the third variety, in which the tarsal cartilage has almost or entirely disappeared.

The summary may be interrupted at this point in order to state that the method of procedure is in all cases to make a long incision exposing the tarsus. This incision, parallel to the lid border and three or four millimetres from it, runs from the superior punctum to the outer canthus. A strip of muscle is excised and the remainder carefully dissected upwards and downwards from the tarsus so as completely to expose the latter, The subsequent procedure depends on the conditions found. If the tarsus is whitish and smooth, and if the muscle dissects off easily, the fault is one of curvature only. Then, at the juncture of the lower third with the upper two-thirds the whole length of the tarsus and mucous membrane is divided "as if you wanted to blunt the edge of your bistoury on the protecting plate." If, on the other hand, the tarsus be dirty grey or yellowish, rugose, thickened, strongly convex and adherent to the overlying tissues, then, after the method of Snellen, a wedge may be taken out of the tarsus alone, but, preferably, total wedge-shaped tarsectomy should be performed. In this operation a wedge is taken out of both tarsus and underlying tissue, so that, indeed, the apex of the wedge is conjunctival. This may be done either *en bloc*, or *morcellement*, by paring away the edges of an incision made as if for tarsotomy. If, as has been stated, the tarsus has almost disappeared, some marginoplastic operation is required.

The author details the method of stitching the lower tarso-ciliary flap to the upper part of the tarsus in such a way as to bring forward the line of cilia and cause the perfect coaptation of the raw surfaces, whether the operation be tarsotomy or tarsectomy, but places more stress on the reduction of the deformity than on the exact manner of holding the parts together.

The summary ends thus: "Give all your attention to reduction of the deformity. Reduction is more important than coaptation. The ligatures will be placed so as to be, as Panas has said, 'correcting threads' (*fils redresseurs*). The post-operative course is simple enough; granulations, œdema of the free flap, and anteflexion of the conjunctiva are transient and simple post-operative incidents of no gravity." ERNEST THOMSON.

IX.—BACTERICIDAL SUBSTANCES IN THE CONJUNCTIVAL SECRETION.

zur Nedden.—**Researches regarding the presence of bactericidal substances in the conjunctival secretion, with remarks on the healing processes in conjunctival catarrh.** (**Untersuchungen über das Vorkommen bakterizider Substanzen im Bindehautsekret nebst Bemerkungen über den Heilungsprozess der Bindehautkatarrhe.**) *Zeitschrift f. Augenheilkunde*, Oktober, 1907.

zur Nedden remarks that our knowledge of the participation of the ocular tissues in the changes conferring immunity has been considerably augmented during recent years. Bactericidal, hæmolytic, and agglutinating bodies have been detected in the aqueous, the cornea, the lens, and the vitreous. It has been demonstrated that the anti-bodies which appear in the blood of the immune organism make their way into the eye. Similarly, the protective substances, which are always present in normal blood, are also met with in the avascular tissues of the globe. But anti-bodies have so far not been detected in the conjunctival secretion.

zur Nedden first satisfied himself that tears had no bactericidal power. He used cultures of the typhoid bacillus, the bacillus of dysentery, and a variety of the Morax-Axenfeld diplobacillus from a case of hypopyon-keratitis, which grows readily on ordinary glycerine-agar. The active serum of the patient who supplied the tears showed a strong bactericidal effect upon these cultures. The mucous or muco-purulent secretion from a normal conjunctiva was quite inactive, but when taken from cases of catarrhal conjunctivitis, it inhibited the growth of cultures. Cases of gonococcal, Koch-Weeks', and diplobacillary infection manifested no specific difference in power; but secretion from acute inflammations, no matter how caused, were always more actively bactericidal than from subacute conditions. The action was most powerful at the height of the attacks, and became progressively weaker as the inflammation diminished. If the secretion had remained for a long time in the canthus it was found to be inactive, but it would tolerate drying for a short time. Were the secretion heated to 58° C. for three-quarters of an hour, it became inactive.

zur Nedden found that the bactericidal substance was equally present in the solid and fluid elements of the secretion. Its activity was, except in the case of fresh blennorrhœal pus, always less than that of the blood-serum. The secretion from the lacrymal sac in cases of dacryocystitis was impotent.

zur Nedden found it practically impossible to test the

bactericidal power of the secretion upon gonococci, pneumococci, and Koch-Weeks' bacilli, on account of technical difficulties in the culture of those organisms.

Opsonins are always present in the secretion from a gonococcal infection, and sometimes when the pneumococci and Koch-Weeks' bacilli are responsible for the disease. This he substantiated by observing the result of opsonic action on the intra-cellular position of the organisms in question.

In fact, the investigation of the conjunctival secretion in infective catarrhal conditions demonstrates that the toxins secreted by the micro-organisms attract certain substances from the blood which destroy them. Our treatment must render the passage of these bodies easier—we must try to increase the inflammatory reaction. It is impossible to cause passive hyperæmia by Bier's method, on account of the special local anatomical conditions; we must obtain our hyperæmia by chemical agencies. The action of astringents has never been fully grasped, but apparently they cause an increase in the amount of bactericidal substance in the conjunctiva. This can act much more effectively deep in the tissues than on the surface where it is diluted with mucus and tears. The micro-organisms are undoubtedly present deep in the tissues, so we must use an astringent which penetrates. Silver nitrate does not fulfil this condition, but its irritative action causes an active hyperæmia of the deeper layers, and to this, rather than to its local disinfecting action, must its beneficial action be ascribed. zur Nedden uses silver nitrate in purulent conjunctivitis, because it gives rise to active transudation from the deeper layers. In more chronic conditions he prefers the milder astringents, lead acetate and zinc sulphate.

zur Nedden does not attach much importance to the direct bactericidal power of the astringents used, although, doubtless, this action is a useful adjuvant. He discusses the question as to whether the undoubted superiority which zinc sulphate has established in diplobacillary infection is really due to any specific action. He criticises the experiments of Silva, and compares them with those of Paul. He concludes that zinc is superior, because it causes just that amount of hyperæmia which is most effective in diplobacillary conjunctivitis, generally a mild and chronic type of inflammation. The active co-operation of the tissues is necessary; silver nitrate acts too powerfully; oxycyanide of mercury has no action whatever in causing hyperæmia. The energetic use of zinc sulphate has been very successful in diplobacillary ulcers, but zur Nedden holds that it only increases the bactericidal substances in the corneal tissues. He himself has shown that they increase after a Saemisch's section and after the subconjunctival injection of saline solutions. An extensive bibliography concludes an interesting article.

T. Harrison Butler.

X.—OCULAR BIRTH INJURIES.

Thomson, Ernest, and Buchanan, Leslie.—A contribution to the study of ocular birth injury. *International Clinics*, 1907, Vol. iii.

In this paper **Thomson and Buchanan**, addressing not only those specially interested, but also general practitioners and medical jurists, have brought together and summarised the essentials which can be gathered from the literature of the subject. They have added to this a tabulated statement of twenty-two cases of injury to the eye of the child at birth, which they have seen and published in various periodicals. To make the paper more complete, they have also reproduced charts, drawings, and photo-micrograms which they have used to illustrate their papers in other publications. There can be no doubt that the importance of the subject fully justifies the authors in publishing, in a more complete form than has been done hitherto, a generalised statement regarding ocular birth injury.

The paper begins by a brief *résumé* of the various injuries which may occur, and then goes on to explain how the damage is done. In this connection it is pointed out that the obstetrician cannot justly be blamed for any injury to the child, a most important point, we should think. After this a few special types of injury are taken up for discussion. Such are corneal ruptures, which are fully discussed, injury to the brain, etc., and injuries to the orbit, with its results. These parts make interesting reading.

The paper is a most useful contribution to the literature of the subject, and should serve to quicken a greater interest in birth injuries. S.S.

XI.—TUBERCULOSIS OF THE CHOROID.

(1) **Snell, Simeon.—Tubercle of choroid.** *Transactions Ophthalmological Society* U.K., 1907.

(2) **Tay, Waren.—Tubercle of the choroid, the discovery of which led to the diagnosis of tubercular disease.** *Ibidem.*

(3) **Cargill, L. V.—Solitary quiescent ("obsolescent") tubercle in the right eye, associated with tubercular glands in the neck.** *Ibidem.*

(1) In **Snell's** patient, aged 12 years, tuberculous abcesses of arm and leg were associated with the presence within the eye of a yellow, grey mass, over which the retinal vessels were seen

coursing. The eyeball increased in size despite general tonic treatment. Injections of tuberculin T. R. were commenced, a record being made of the opsonic index. The child benefited greatly, and the eye became smaller. Nevertheless, ultimately it had to be excised. The patient afterwards did well. Examination of the eye proved the tuberculous nature of the mass, which chiefly involved the choroid.

(2) **Tay** showed a sketch of a case of tubercle of the choroid made in 1884 (and published in the *Transactions Ophth. Society* for 1885 in connection with Lawford's paper on "Tubercle of the Choroid"), by way of combating the impressions made by Osler, in the statement (quoted by Cargill and Mayou, *Transactions Ophth. Society*, 1906) "that in the general or typhoid form of acute miliary tuberculosis, careful examination of the eyes might show choroidal tubercle, though he had never known a diagnosis made from their presence alone." In the present case (1884) there had been no suggestion of tubercle until Tay appended to his diagnosis of the eye condition the words "in all probability tubercular."

(3) **Cargill** reports the case of a female of 20 years who with compound hypermetropic astigmatism corrected had V. $= \frac{6}{9}$. When examining the fundi, a white slightly elevated area a little larger than the disc was found about one P. D. above the right papilla; the surface was speckled with pigment, there was a little absorption of pigment above, and a spot or two of pigmentation below. Vitreous clear. No other fundus changes. Six months later, no change. Six operations had been performed on tuberculous glands in the neck. ERNEST THOMSON.

XII.—PARINAUD'S CONJUNCTIVITIS.

Dehenne and Bailliart.—Five new cases of Parinaud's conjunctivitis. (Cinq nouveaux cas de conjonctivite de Parinaud.) *Bull. et Mém. de la Société Française d'ophtalmologie*, T. XXIV, 1907, p. 633.

Five cases of Parinaud's conjunctivitis are reported by **Dehenne** and **Bailliart** in patients aged respectively 12, 12, 13, 25, and 51 years. The series included three females and two males. The disease was unilateral in all the cases, and in each instance, save one, the right eye was affected. There were no corneal complications. In four of the patients the ocular symptoms had been ushered in by slight indisposition, shown by anorexia, fever, and general *malaise*. Three of the patients were cured in a month or less, while two, whose condition has improved, still remain under observation. The treatment

included mercury cyanide, yellow ointment, silver nitrate, and weak physostigmine, which is believed by the authors to possess distinct antiseptic properties.

Parinaud, it will be remembered, insisted upon the animal origin of the conjunctivitis which now goes by his name. In four of the cases reported by Dehenne and Bailliart, the patients had been in close contact with animals, and in the fifth case the woman had had to do with birds. The authors comment upon the frequence of the disease among those who by their occupation or the place of their residence are in direct contact with animals, as butchers, grooms, and farmers. The cases of Sans and of Salva, however, which amounted almost to the experimental inoculation of the disease, are altogether exceptional. Contamination, as a rule, is indirect, as in Darier's case in a child who was in the habit of playing with a lamb, or in Rohmer's, where the child slept with a cat in the bed. The malady has often affected the inhabitants of a farm, and in several such observations the farm animals were ill from such diseases as aphthous fever or diphtheria. Doyne, who observed a small epidemic in the Oxford district, believed that the cause might be traced to animals, especially to cats affected with skin disease.* Even dead animals have been suspected of conveying the disease, as in cases reported by Parinaud, Spéville, Despagnet, and Rohmer. Hoor, as the result of his statistical enquiries, believes that animal contagion may be suspected with justice in 65 per cent. of the cases of Parinaud's conjunctivitis. On the other hand, there are cases where the most minute enquiry has failed to bring to light any contact between the patient and animals. As an argument against the animal origin of the conjunctivitis, Dehenne and Bailliart point to the fact that the malady is unknown among the French cavalry soldiers, who live in close association with their horses. In brief, the authors believe that it is possible neither to affirm nor to reject the animal origin of Parinaud's conjunctivitis. The same uncertainty surrounds the bacterial origin of the disease. In Dehenne and Bailliart's cases cultures on agar, gelatine, and bouillon yielded staphylococcus albus, a Gram-negative diplobacillus, and some few Gram-positive cocci. The inoculation of Sabouraud's media yielded a negative result. Despite these results, the authors assume that the conjunctivitis is of bacterial origin, and that the organism concerned leaves the conjunctiva soon after infection.

SYDNEY STEPHENSON.

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* Doyne's observation is the more valuable, since at the time it was made, he was in complete ignorance of Parinaud's work.—EDITORS.

XIII.—SIMPLE CHRONIC CONJUNCTIVITIS.

Peters, A. — The pathology and treatment of simple chronic conjunctivitis. (Die Pathologie und Therapie der einfachen chronischen Konjunktivitisformen.) *Zeitschrift für Augenheilkunde*, November, 1907.

Peters (Rostock) points out that chronic conjunctivitis, the "step-child "of ophthalmology, does not receive the recognition it merits. Considering the general features of the disease, it is hard to differentiate the normal from the pathological. The functions of the mucous membrane are not yet definitely agreed upon. For example, some authorities regard the presence of goblet cells and their mucous secretions as normal—look on them, in fact, as unicellular glands ; others consider that their presence is always pathological. The truth probably lies between the two ; the conjunctiva in the presence of a foreign body or other stimulus can spontaneously secrete enough mucus to surround the foreign body. This view is corroborated by the fact that these cells are infrequent at birth, and become more numerous in later life. In chronic disease of the conjunctiva, goblet cells are present in great numbers. They are not developed from normal pre-existing goblet cells, but are metamorphoses of normal conjunctival epithelium, a result of prolonged irritation. The fact that goblet cells never show karyokinesis strengthens the view that they are degeneration products, and not indispensable to the normal life of the mucous membrane. The deeper cells of the conjunctiva secrete drops of a substance which does not stain with thionine, and which is therefore not yet mucus, but one of its precursors. Under the influence of chronic irritation the number of the large inter- and intra-cellular granules increases *pari passu* with the development of the goblet cells, and both are expressions of the increased activity of the mucous membrane. At the same time the adenoid tissue, which is present to a small extent in the infant's conjunctiva, shows a corresponding increase—in fact, the presence of this adenoid tissue may have a causal relationship to the production of mucus. In addition, the dilated vessels furnish a coagulable transudate which increases the succulence of the conjunctiva and the amount of its secretion.

In the absence of a constant supply of material for sections, examination of the secretion is of prime importance ; for example, a great increase of eosinophile granules is, if one excludes the rare cases of pemphigus, pathognomonic of spring catarrh, and is a great help to diagnosis, especially when vernal catarrh co-exists with trachoma. Peters points out that the first sign of spring catarrh is the presence of a thin glassy pellicle on the conjunctiva, in which no bacteria can be demonstrated.

The morphological contents of the secretion must be studied. It will be found to be rich in fat-like drops, which are also present between the cells of the epithelium. Brownish-yellow masses are frequently seen and exist in the mucous membrane itself; they are insoluble in acid or alkali, and stain superficially with many dyes. Isolated crystalline bodies are to be found; they are probably identical with the similar structures in cosmic dust. Fresh cell material may be examined with advantage. Peters scrapes the palpebral conjunctiva, suspends the material obtained in normal saline on a slide, and carefully covers with a cover-slip. The necessary stain can be placed at the edge, then the peripheral portion will stain, and the central part of the specimen will be unstained, allowing a comparative study of the structures to be made. Giemsa's solution is very satisfactory; it brings out the intra- and intercellular granules. The majority are of a fatty nature, and stain yellowish-red with Sudan III, as also do those structures which are generally called "Russell's bodies," but which Peters had previously seen in chronic conjunctivitis. Chromatophil threads, with their characteristic nodes, are well stained by Giemsa's solution; these are very similar to the threads seen in stained smears from the conjunctiva, but are certainly present in the living tissue. They exist in the adenoid tissue of the naso-pharynx and in the margin of the trachoma follicle, in fact it is as impossible to differentiate trachoma from chronic conjunctivitis by an examination of fresh material as it is from an examination of hardened section. Even the trachoma corpuscle (*Körperchenzell*) is present in the follicles, which can be recognised by the presence of blood-capillaries, in a fresh specimen from chronic catarrh.

The different clinical forms of chronic catarrh can only be classified by bacteriological examination and careful consideration of extraneous circumstances. The so-called "benign follicles" must be regarded as a cause of irritation.

Chronic conjunctivitis may be due to external agencies, bacterial infection, etc.; to spread of inflammation from local affections, as, for example, eczema of the lids; or it may be the result of irritant substances in the blood. The most important of the first group is infection with the diplobacillus, more especially on account of the frequent corneal complications it induces. It may cause few objective symptoms, the patient first seeking advice for failure of vision, caused by the high cell content of the secretion from the conjunctiva. The diplobacillus is so ubiquitous that secretion should be examined, not only in acute but also in chronic conjunctivitis, so that zinc, the specific in this infection, may be employed. Peters finds nothing better than his zinc-ichthyol ointment, which has the following formula:—

Ammon. ichthyol ...	...		0·15
Zinc oxide ...	...	...	5·0
Vaseline alb.	...	...	15·0

He finds that zinc sulphate, although generally successful, sometimes proves disappointing. In pneumococcal infections, not depending upon dacryocystitis, Peters always orders a compress of iodine trichloride, 1 : 2,500, but here, again, in chronic cases, zinc-ichthyol ointment is very useful.

Peters is sceptical as to the influence of certain occupations in causing chronic catarrh : such, for example, as milling, masonry, and smith's work. But in ectropion and lagophthalmos, traumatic inflammation is common. The effects of certain kinds of light is a matter for investigation.

Diseases of the lids play an important part in causing conjunctivitis, such as seborrhœa of the lid-margin and molluscum contagiosum. Peters describes a special kind of lid disease, which, he says, is little known. The skin of the lid is abnormally soft and shiny, and thrown into small folds. If the finger be drawn over the surface a slight resistance is noticed, and more wrinkles are produced. If a fold be lifted up it remains momentarily raised. With a lens small parallel fissures can be seen, which sometimes contain small drops. The condition, one of chronic dermatitis, is common in women. They are extraordinarily sensitive to wind and dust, epiphora is common, and the edges of the lids are injected. Such a case is only aggravated by treating the conjunctiva, but a little simple powder often cures the case. If it does not, a tar preparation must be used. Peters uses liquor lithantracis acetonicus (Sack).

The author thinks that the effect of ametropia in causing chronic conjunctivitis is much exaggerated, especially by the Americans. In his experience, chronic catarrh is far more likely to cause asthenopia, and many of the reflex hyperæmias are due to masturbation. In the third group, the chief influence is exerted by the gouty and rheumatic diatheses, but at present the subject is little understood.

Many cases must be regarded as modified trachoma, especially is this the case with *conjunctivitis sicca*, in which trachoma bodies and adenoid tissue can be found ; but until the cause of trachoma has been discovered, we can expect no further light on the subject.

Silver nitrate and copper sulphate are useful in reducing a hypertrophied, engorged conjunctiva, acting chiefly as caustics. In this respect protargol fails, and is unsuitable for chronic cases. If in spite of the treatment mentioned, a feeling of a foreign body in the eye and of heat remain, it is necessary to scrape the lid thoroughly under cocaine. This procedure generally gives great relief, which often lasts for months. If necessary, the operation can be repeated.

In cases which seem to depend upon an undue excitability of the nervous mechanism, and which are associated with neuralgia of the supraorbital, the following is useful :—Secal. cornut. 1·0, Quininæ hydrochlor. 2·0, Ferri Sulph. 3·0, Ext. Gent. q.s., ut fiat

pil. 100: two pills three times a day. If this fail, tincture of eucalyptus will almost certainly allay the asthenopic symptoms.

T. HARRISON BUTLER.

XIV.—THE COLOUR-VISION, ETC., OF BIRDS.

(1) **Hess, C.—Light and colour-sense of day birds. (Ueber Lichtsinn und Farbensinn der Tagvögel.)** *Arch. f. Augenheilk.*, Juni, 1907, p. 317.

(2) **Hess, C.—On adaptation and visual purple in hens and pigeons. (Ueber Dunkeladaptation und Sehpurpur bei Hühnern und Tauben.)** *Arch. f. Augenheilk.*, Juni, 1907, p. 298.

(3) **Abelsdorff, A.—A few remarks on the colour-vision of day and night birds. (Einige Bemerkungen ueber den Farbensinn d. Tag. und Nachtvögel.)** *Arch. f. Augenheilk.*, Juli, 1907, p. 64.

(1) **Hess** has found that the spectrum visible to hens and pigeons is shorter than that which is visible to us. When the rays of light coming from an arc lamp were passed through a prism and thrown upon a floor covered with rice, so as to make the grains appear in the colours of the spectrum, he observed that the birds always began picking in the red and especially in the dark-red portion of the spectrum. When they had cleared this part they proceeded to the yellow, then to the green, but they did not go beyond the greenish-blue. PERCIVAL J. HAY.

(2) **Hess** has sought to ascertain whether there is any foundation in fact for the popular idea that hens are night-blind, and he has found that this is not the case. Hens, as well as pigeons, are not only capable of adapting themselves to reduced illumination, but are able to do so very well. The light minimum is almost the same as that of man. The retina of these birds is poor in reds and visual purple. In view of the fact that, in spite of this, the adaptation of the retina is good, Hess urges that the visual purple can have little to do with adaptation. PERCIVAL J. HAY.

(3) **Abelsdorff** gives the results of some experiments with birds, in which he noted the pupillary reaction to light of various colours. He found that, compared with the human eye, the pupil of the pigeon did not react so well to green and blue light. Experiments with owls, on the other hand, led to the opposite result; their pupils reacted much better to blue light. The eyes of dogs were the same as those of man, whereas cats' eyes were much more sensitive to blue light.

PERCIVAL J. HAY.

XV.—THE OCULO-MOTOR MUSCLES IN ORGANIC HEMIPLEGIA.

Chaillous.—On the state of the oculo-motor muscles in organic hemiplegia of adults and of children. (Sur l'état des oculo-moteurs dans l'hémiplégie organique de l'adult et de l'enfant.) *Ann. d'oculistique*, T. CXXXVI, p. 286, octobre, 1906.

Challious has examined the condition of the ocular muscles in seven adult patients suffering from organic hemiplegia and in four patients suffering from infantile cerebral hemiplegia. In doing so he was careful to exclude all cases in which the eyes were not normal with practically equal vision. From his investigation he has formed the following conclusions: 1. All the homologous muscles of both the eyes are affected by the paralysis in organic hemiplegia of the adult similarly to the thoracic and abdominal muscles and to those innervated by the superior facial. 2. Other things being equal, the muscles on the paralysed side are more affected than those of the healthy side. 3. In the early stages, at any rate, the paralysis of the oculo-motors is proportional to that of the muscles innervated by the superior facial. 5. The amount of paralysis of the oculo-motors is in direct relation to the intensity of the hemiplegia while the latter is recent. 6. The oculo-motor troubles in these muscles follow in all points of their evolution the general laws of nervous pathology relating to hemiplegia. 7. Ptosis, mydriasis, and other troubles of the internal muscles of the eyes are much less frequent or disappear more rapidly. 7. In children (at any rate in old cases) differences between the homologous muscles similar to those occurring in adults are not found, probably owing to greater educability of the muscles.

These conclusions on the whole agree with those formed by Miraille (1) and Desclaux (2) and differ from those of Wilson (3).

R. J. COULTER.

XVI.—THE DECENTERING OF LENSES.

(1) Campos.—On the decentering of lenses. (Du décentrage des verres correcteurs.) *Annales d'oculistique*, janvier, 1907.

(1) *Archives de Neurologie*, 1899, No. 37.
(2) *Thèse de Paris*, 1903, etc.
(3) *Revue Neurologique*, 1904, p. 99. *Soc. de Neurologie*, 3 mars., 1904, etc.

(2) Polack, A.—On the decentering of spectacle lenses: trial of a subjective method. (Apropos du décentrage des verres de lunettes: Essai d'une méthode subjective.) *Bull. et. Mém. de la Société Française d'ophtalmologie*, T. XXIV, 1907, p. 667.

(1) **Campos** (Cairo) considers that sufficient attention is not paid to the extent to which lenses should be discentered, in order to avoid their prismatic action when used for near work, and gives demonstrations of how this can be calculated for both the horizontal, and the vertical meridians. He appends tables which give the inter-central distances which he estimates as correct for various amounts of convergence with base-lines—*i. e.*, distances between the centres of rotation of the eyes—ranging from 50 mm. to 75 mm. and the amount of vertical decentering and of tilting of the lens appropriate for various degrees of inclination of the eye downwards, the lenses being in each case supposed to be worn 15mm. in front of the cornea. He suggests that no prescription for glasses for near-work is complete without directions as to the inter-central distance and amount of the downward decentering and tilting of the lenses which is required.

R. J. COULTER.

(2) **Polack** (Paris) points out that decentering of lenses has assumed greater importance since the practice became more or less generalized of fully correcting ametropia and anisometropia. The pioneer work of Giraud-Teulon (1860) and of Wharton Jones (1862) is glanced at, and the formulæ proposed by Maddox (1886), Vignes (1888), Jackson (1888), Coque (1890), Imbert (1895), Javal (1896), and of Triepel (1898), are alluded to. Polack then defines what he means by the words "centering" and "decentering," discusses the value of the mathematical way of determining the points, and, finally, describes a subjective way of controlling the results as determined roughly by calculation. In conclusion, Polack says that mathematical determinations of centering and decentering of spectacle glasses are useful on account of the rapidity with which they may be determined. The best are those that measure the distance between the eyes by the base-line and not by the inter-pupillary line. But when all is said and done, mathematical proceedings can yield approximate results only. They must be controlled subjectively. A subjective method based upon the examination of binocular vision may be realized with the aid of Rémy's diploscope and *la lunette à double décentrage*. It may be employed alone or together with other plans, and it gives readily the horizontal and the vertical centering or decentering.

SYDNEY STEPHENSON.

XVII.—VISUAL ACUITY.

(1) **Bouchart.** — Vision. (La vision.) *L'Ophtalmologie Provinciale*, mars, 1905.

(2) **Landolt, E.**—A uniform scale for the estimation of visual acuity. (Die Vereinheitlichung der Bestimmung der Sehschärfe.) *Zeitschr. f. Augenh.*, Juni, 1905.

(3) **Struijcken.**—Acuity of vision and of hearing. (Gezichts- en Gehoor-Scherpte.) *Tijdschrift voor Geneeskunde*, I, 1905, p. 196.

(4) **Bouchart.**—The vision of marksmen. (La vision du tireur.) *L'Ophtalmologie Provinciale*, juillet, 1905.

(5) **Pergens.**—Researches on visual acuity. (Recherches sur l'acuité visuelle.) *Ann. d'oculistique*, T. CXXXV, p., 11 janvier, 1906.

(6) **Landolt, E.** — Form sense and visual acuity. (Formsinn und Sehschärfe.) *Archiv f. Augenheilkunde*, Juni, 1906.

(1) **Bouchart** gives an account of some modern theories with regard to vision and some experiments of his own on (1) the characters of retinal phenomena; (2) the characters of after-images; (3) the relation between the phenomena of the right eye and those of the left. The article, however, does not lend itself to abstract. R. J. COULTER.

(2) **Landolt** emphasizes the necessity of a uniform scale for testing visual acuity, and after a consideration of the proposals made by various authorities, comes to the conclusion that a figure like the Snellen letter C, in which the length is five times the thickness, and with the opening turned in various directions, is the most generally useful and most trustworthy. A. LEVY.

(3) **Struijcken** compares the power of the eye and the ear to differentiate impressions as to direction, intensity, and time. The eye possesses by far the greater acuity in these respects. Two impressions at an angle of one minute are discerned by the eye, but the ear is not sure about 15 to 30 degrees, the eye recognises a difference of $\frac{1}{40}$ to $\frac{1}{50}$ in intensity, the ear only a difference = 1. The eye has also a far greater sensibility for difference in time, commonly called colour-sense; the eye can discern colours differing 0·005 micron in wave-length, therefore it must be sensible to a difference in time of only $\frac{1}{105}$ second. The ear can discern notes of $\frac{1}{1000}$ difference in vibrating number. G. F. ROCHAT.

(4) **Bouchart** considers that a good shot must have in addition to good visual acuity, very active accommodation and rapid cerebral perception of the images formed on the retina in

order that he may obtain a simultaneous image of: (1) the target; (2) the foresight; (3) the backsight; which three objects must be focussed consecutively if they are to be seen clearly. He discusses various questions with regard to the training of soldiers in firing. R. J. COULTER.

(5) **Pergens** gives a learned account of the opinions on the subject of vision recorded in literature from the earliest antiquity to the end of the seventeenth century. R. J. COULTER.

(6) **Landolt** refers here to two papers by Guillery and Pergens, and states the reasons that led him to design the test-types known under his name. PERCIVAL J. HAY.

XVIII.—CONGENITAL ENTROPION.

Leblond, Etienne.—The ætiology of congenital entropion. (Étiologie de l'entropion congénital.) *Archives d'ophtalmologie*, décembre, 1907.

Congenital entropion may be either primary, when it is connected with no malformation of the eyeball, or secondary, when it is the consequence of a reduction in the size or the absence of the globe, as in some cases of microphthalmia or of anophthalmia. Primary congenital entropion is a rare anomaly, of which instances have been reported by v. Ammon, Guibert, Harlan, Dimmer, and Denig. There are several congenital lesions or malformations that may determine entropion: (1) an exaggerated development of the skin of the eyelids has been suggested by Dimmer, in whose case entropion was associated with epicanthus; (2) a conjunctival cicatrix formed during intra-uterine life was the cause in Denig's case; (3) aplasia of the tarsus appeared to determine entropion in the cases of Harlan and Guibert respectively.

The case reported by **Leblond** (Dunkirk), which differs in ætiology from the others, is as follows:—

A girl, 8 years of age, presented entropion of the lower eyelids, which had set up a violent inflammation of the conjunctiva and cornea as regards the left eye, where the malformation was the more pronounced. The entropion had been noted at birth, and there could be the less doubt on this point, since an elder sister, now 18 years of age, had been operated on by Dr. Dransart for a similar condition, also present from birth. There was no other history of malformation in the family. Leblond's patient was of normal development, and showed no stigmata of degeneration. The conjunctivæ were free from cicatrices or other traces of antecedent inflammation. The palpebral fissure had a length of 55 mm. There was entropion of each lower eyelid. Its cilia were well-developed, but owing to the position of the lid, they were directed towards the eyeball. The intermarginal zone of the lid was turned in towards the conjunctival cul-de-sac, so that the palpebral border was formed by a cutaneous fold. The skin, however, was not hypertrophied. The lacrymal puncta were not inverted. In the course of an operation for correction of the deformity (de Lapersonne's was adopted) the tarsus was found to be well developed, while the ciliary portion of the orbicularis muscle was so excessive that a considerable portion of it had to be removed. The result of the operation was excellent.

Leblond considers that in the case related above, the entropion was due to the hypertrophied condition of the ciliary part of the orbicularis muscle, as demonstrated during operation. As he points out, entropion of muscular origin is not uncommon as an acquired defect. There is, accordingly, no reason for denying the validity of a similar origin for certain cases of congenital entropion. SYDNEY STEPHENSON.

XIX.—HÆMORRHAGE FROM THE CONJUNCTIVA.

Sulzer. — Severe spontaneous conjunctival hæmorrhage due to a hereditary hæmorrhagic diathesis differing from hæmophilia. (Hémorragie conjonctivale spontanée grave provenant d'une diathèse hémorragique héréditaire différente de l'hémophilie.) *Ann. d'oculistique*, T. CXXXVII, p. 397, mai, 1907, and *Bull. et Mém. de la Société Française d'ophtalmologie*, Vol. XXIV, 1907, p. 298.

Sulzer (Paris) records the case of a lady, aged 60, who for a period of ten days had from 2 to 8 attacks of hæmorrhage from the conjunctiva of the right eye *per diem*. One of these lasted four hours, and was so severe as to leave the patient in a state of extreme anæmia. The blood oozed from the entire mucous membrane, except from the scar left after the removal of a chalazion a few days previous to the first attack, the operation being accompanied by very slight hæmorrhage. The cessation of the attack was preceded by repeated purgation with calomel and sulphate of soda, and accompanied by slight spasm of accommodation in both eyes, as shown by the patient complaining that her distant glasses (+1.25D.) made objects appear misty. This was followed after an interval of six days, by a slight attack of glaucoma, and 14 days later, a spasmodic ptosis developed in the same eye. For ten years previous to the conjunctival bleeding the patient had suffered from subcutaneous hæmorrhages which were controlled by the administration of digitalis, and she had also had violent attacks of epistaxis, followed by vesical and intestinal hæmorrhages. Her mother and her twin sister had died of repeated hæmorrhage from the mucous membranes.

The case differs from hæmophilia in the following respects:— (1) the hæmorrhages did not commence until the patient was over 50 years of age. (2) Traumatisms, *e.g.*, the removal of the chalazion, caused very slight bleeding. (3) The bleeders in the family were females and the tendency was handed down from mother to daughter. At the commencement of the hæmorrhages

the patient showed no sign of hysteria, but during the course some symptoms characteristic of that disease developed, although the hæmorrhages might not be considered as hysterical. Sulzer is not satisfied with such an interpretation of the case, and is of opinion that in the present state of our knowledge it cannot be explained. R. J. COULTER.

XX.—ACCIDENTAL VACCINIA.

(1) **Brinton, A. G.—Notes on six cases of accidental vaccination of the conjunctiva.** *Transvaal Medical Journal*, May, 1906.

(2) **Menzies and Jameson.**—*British Medical Journal*, January 26th, 1907.

(1) **Brinton** (Johannesburg) gives interesting details of six cases of accidental vaccination of the conjunctiva observed by him some years ago while acting as resident surgical officer at the Birmingham and Midland Eye Hospital, England. The cases all occurred in the space of twelve months. The individuals affected included three women, two children, and one man. Five of them were directly infected from children who had been recently vaccinated, while the sixth case occurred in a house where a child had been vaccinated a week before. Full notes of the cases are given, but it is merely necessary to observe in this place that one cornea alone suffered, and that no symblepharon resulted. Brinton lays some stress on certain other points—as, for example, the hardness of the ulcers and the great œdema of the neighbouring tissues, the large amount of serum poured out, and the enlargement of lymphatic glands in connection with the affected parts.

(2) **Menzies** (Rochdale) and **Jameson** (Rochdale) report the accidental vaccination of the cornea, which occurred in one of the writers. Briefly, the facts were as follows.—One of the writers of the present communication (W. E. J.), whilst breaking a tube of Chaumier's lymph, received a fragment of the glass in his eye, which was promptly washed out. Seven days later, a small area, the size of a pin's head, denuded of epithelium, was found in the lower-outer quadrant of the cornea of the eye that had been injured. Three days later—ten days after the accident—this area was found to have involved $\frac{1}{4}$ of the total area of the cornea, and to be accompanied by considerable injection of the conjunctiva. Chemosis and œdema of the lids became pronounced, and the

preauricular gland enlarged and tender. Twenty-six days after the injury, epithelium began to spread over the denuded surface of the cornea, and the process was completed in five days. Recovery, however, was retarded by a secondary ulceration of the affected area. The outcome as regards sight was $\frac{6}{18}$ some ten months after the accident.

REVIEWS.

Tests and Studies of the Ocular Muscles. By ERNEST E. MADDOX, M.D. Published by the Keystone Publishing Co., of Philadelphia, U.S.A., and 45, Holborn Viaduct, London, E.C. Second Edition, 1907. Price 6s. 3d.

We welcome a second edition of Dr. Maddox's well-known book on "The Ocular Muscles." It is even a more attractive volume in its present and larger form than the previous one. The chief additions are a chapter on nystagmus and references to Worth's work on strabismus. The description and plates of Tenon's fascia are excellent, and we cannot praise too highly the chapters on the diagnosis of ocular paralyses. The author's mnemonic is simple, clear, and accurate, and, further, it has the additional advantage that once read it cannot readily be forgotten.

The most difficult part of the book is the description and discussion about Listing's law. When the globe rotates about an oblique axis in the equatorial plane, or rather in Listing's plane, there is an apparent rotation about the optic axis. This false torsion, however, is stated by Helmholtz to take place towards the left under the same conditions that Donders describes it as taking place towards the right. The author shows that this discrepancy is more apparent than real, as Helmholtz adopted a different plane of reference from that of Donders, and when this difference of convention is understood, the statements of each are found to be descriptions of the same phenomena. The deductions of Helmholtz from these observations are different, however, from those of other workers on the subject, and the author's table of the amount of torsion in no way corresponds with the similar table given by Helmholtz, so that the agreement is not quite so perfect as would be imagined from a perusal of this book. It is a difficult subject, but, in our opinion, the clearest, most concise, and the fullest explanation of the discrepancy is to be found in Le Conte's little book on "Sight."

It seems invidious to find fault with Dr. Maddox's book, which shows on almost every page evidence of the painstaking care and original thought the author has devoted to the subject, but we mention one or two slips in the hope that they will receive attention in the next edition.

In the table of contents of Chapter IX, the last two items are not found in the text of this edition. On page 61 the question is raised whether the superior and inferior recti really rotate the globe about one common axis. The author states that if this is the case during the primary position of the sound eye, a paralysis of the superior rectus must cause the same displacement of the cornea as a contraction of the inferior rectus, *i.e.*, depression and adduction of the cornea. A little consideration will show that the author's statement is erroneous. From page 73 we correctly infer that the adducting action of the superior rectus in the primary position is rather more than one-half of its elevating action ; consequently, when the normal tension of the superior rectus is lost, the cornea must be depressed and abducted. If, however, the inferior rectus contracts so as to depress the eye to the same amount, in opposition to the normal tension of the superior rectus, the cornea will be adducted to exactly the same degree that paralysis of the superior rectus causes abduction. Now the fact that clinical experience shows that abduction takes place in paralysis of the superior rectus, instead of disproving, proves that the axis of rotation is common to the superior and inferior recti.

On page 247 there is a slip in the formula for Meissner's test. If the author had made a cardboard model he would have seen that the formula should be :—

$$\tan T = \tan I \tan C$$

Students of solid geometry know how easily a mistake is made in the solution of a problem in three dimensions when trusting to diagrams in side elevation and plan as the author has done.

Les Corps Étrangers Magnétiques Intra-oculaires et leur Extraction. (**Magnetic Intra-ocular Foreign Bodies and their Extraction.**) By Dr. RAYMOND BÉAL. Paris : G. Stenheil, Éditeur, 1908.

Within the compass of 127 pages Béal discusses the diagnosis, extraction, and prognosis of intra-ocular magnetic foreign bodies, and includes, besides, an exhaustive bibliography. The question of diagnosis is very fully dealt with and minute instructions are given on all points, so that it is hardly possible for the merest tyro to go astray as long as he follows the rules laid down. Some valuable hints are given with regard to the use of X-rays for localisation of foreign bodies. The reproductions of skiagrams by Guilloz are very instructive. Methods of localisa-

tion of foreign bodies by X-rays (of which there are about 65 !) are reduced to three groups, as arranged by Pouzol. The author seems to favour Holt's method, of which a full description is given. Most of the other methods he dismisses in a few words. Notwithstanding the numerous objections that have been raised against the giant magnets, the author finds them preferable to the small magnet. He favours Volkmann's magnet, which seems to be the only giant magnet which he has used in his own cases.

Its value as a diagnostic and therapeutic agent is discussed in detail, and its advantages and disadvantages are critically reviewed. The hand-magnet also comes in for a fair amount of attention and criticism. Our experience, by the way, does not tally with the author's statement, that "chloroform is indispensable in operations with the small magnet."

Attention is given to the question of retained foreign bodies, sympathetic ophthalmia, and the histology and chemistry of siderosis. The author's views on spontaneous extrusion of foreign bodies seem to us a little optimistic. His personal statistics are rather meagre and the results not very good. It is possible they might have been better had the small magnet been used after localisation of the foreign body by X-rays.

The information which has been collected together with this little volume is lucidly given and well-arranged, and should prove of help to all who have to deal with foreign bodies in the eye or orbit. J. JAMESON EVANS.

Squint and Ocular Paralysis. By E. LUCAS HUGHES, M.R.C.S., L.R.C.P. Illustrated by the Author. London : H. K. Lewis. 1907. Price, 6s. 6d. *net.*

Squint and Ocular Paralysis by Mr. E. Lucas Hughes is a book containing upwards of 200 pages, and dealing with the subject of muscular errors of the eyes. It is divided into three parts : Part 1, squint ; part 2, ocular paralysis ; and part 3, disturbance of muscle-balance.

After a short introductory chapter which deals with the history of squint, the author at once enters upon a systematic description of the conditions met with. At first glance one is struck by the fact that a large amount of the text is in inverted commas, having been taken bodily from other works on the subject, and were these copious extracts removed, the book would be seriously affected as regards both its size and value. But on reading it more carefully, anyone familiar with the literature of the subject can at once see how unoriginal the book is. Mr. Hughes has read Worth, Parinaud, and other standard writers only too well, and although it is an excellent feature for an author to embody the ideas of his predecessors, yet a line has to be drawn somewhere, and we have

no hesitation in affirming that Mr. Hughes has drawn it only at a point which lays him open to the charge of pirating other men's work. If anyone were to peruse Worth's *Squint* and then the book under review, he might well be excused if, on reading the latter, he imagined he had taken up the former by mistake. An aggregate of many pages is copied wholesale, and almost all Worth's original ideas are incorporated in the book, which are by no means always acknowledged, and they are put in such a way that the casual reader might well imagine them to be the original ideas of the author. There is no difficulty in pointing out many places where the two books are identical; much has been transcribed; the ideas in other parts are the same; and, what is the worst feature of all, numerous passages are virtually, although not actually, taken out word for word. In a sentence, tenses and words are altered, the construction is modified, but it means the same thing, and however charitable one may feel disposed to be, it is impossible to fail to see that Mr. Hughes has morally laid himself open to the charge of "lifting" another man's work. We have no hesitation in saying that but for Worth, Mr. Hughes' book would never have been written. The illustrations are some of them original, but many of them are acknowledged copies from Worth and others.

In the preface the author tells us that he has endeavoured "to bring into line and compare some of the best practical teaching of the English and foreign schools." This is all very well, but it is going beyond the limits of good taste when one sees other men's views and ideas taken and described just as if they were the original views of the author. Most of it is quite good; but we should advise seekers after knowledge to read the originals, rather than this, which is a hash-up of the work of many authors, and more particularly that of Worth.

Encyclopédie française d'Ophtalmologie. Publiée sous la direction de MM. F. LAGRANGE et E. VALUDE. Tome VII. Paris: Octave Doin, Éditeur, 8, Place de l'Odéon, 1908. Price for the work *complete*, 150 francs.

The French Encyclopædia of Ophthalmology, edited by Drs. F. Lagrange (Bordeaux) and E. Valude (Paris), has now reached its seventh volume, leaving two more volumes to be published, it is thought in the course of the present year. The seventh volume deals with affections and injuries of the crystalline lens by Drs. Henri and Louis Dor (Lyons), diseases of the optic nerve by Drs. Marc Dufour (Lausanne) and J. Gonin (Lausanne), tumours of the optic nerve by Dr. Félix Lagrange (Bordeaux), paralysis of the ocular muscles by Dr. C. Sauvineau (Paris), and lateral homonymous hemianopsia by Dr. Rochon-Duvigneaud (Paris). The volume contains 141 text-figures, in addition to one plate in colours.

Pathogènie du Glaucome. (The Pathogeny of Glaucoma.) Par le Dr. ALBERT TERSON, de Paris. (Rapport présenté à la Société Belge d'Ophtalmologie, dans la Séance du 24 novembre, 1907.) Bruxelles: Imprimerie Médicale et Scientifiques, L. SEVEREYNS, 44, Montagne-aux-herbes Potagères. Pp. 76.

Dr. Terson, the writer of this *Report*, states that the preparation of an account of the present state of our knowledge in regard to the pathogeny of glaucoma was confided to him by the Belgian Society of Ophthalmology, and he commences by supposing that the various theories of the nature of glaucoma are familiar to his readers, who entertain certain general ideas, which he proceeds to expound. Thus, it may be stated broadly that glaucoma is not an isolated affection, but rather the localisation of certain processes which affect the system as a whole. As in some other instances, an ophthalmological name has been applied to a disease which is only an expression of a malady affecting the system at large. To take a common and well-marked example, syphilitic iritis is only the local manifestation of a syphilitic infection of the whole system, notwithstanding that a special name is applied to it, no question can arise but that in its ætiology, pathology, bacteriology, and therapy it is truly syphilis, the local evidence of a general condition. For himself, he believes that glaucoma in all its forms, whether acute, subacute, or chronic, is probably only an œdema, although the circumstance of its occurrence in a closed cavity, or a cavity the outlets of which can be obstructed, necessarily leads to augmented tension, varying in its intensity and course. These forced or necessary consequences, and even the increased tension or hypertony itself, are the conditions that confer a certain mysterious character upon glaucoma and complicate the problem of its nature. Glaucoma and excessive tension must not be confounded. Hypertony is a symptom; glaucoma is not; it is, according to Demicheris' definition, a *syndroma*, of which hypertony is one of the elements. Hypertony is itself simply a result. Cases are to be met with, such, for example, as amaurosis with excavation, which present the characters of glaucoma without hypertony, and, on the other hand, there are others when the only feature of glaucoma present is the hypertony. The ætiology of glaucoma is always complex, and many circumstances modify its mode of development. Heredity, for example, is an important predisposing condition: von Graefe and Rogman have actually cited certain families as glaucomatous, in the same way that others are regarded as liable to heart, skin, or articular disease. The professions, various social conditions, fatiguing and absorbing occupations like gambling, anxiety of mind, all strongly predispose to glaucoma. In regard to sex the evidence is conflicting. Dr. Terson has himself seen fulminating bilateral attacks of glaucoma

most frequently in women, which corresponds with the experience of the writer of this notice. The Jew is especially liable to it, and Jews perhaps form one-quarter of all the cases that present themselves. A gouty or arthritic diathesis has been frequently, and concomitant syphilis occasionally, observed. Terson has met with an instance where mercurial treatment proved of great service when the employment of myotics and iridectomy seemed to have in some measure intensified the attack. A highly-strung nervous temperament is undoubtedly a potent predisposing cause. Disordered or diseased conditions of various organs must be enumerated amongst the causes predisposing to glaucoma. Thus, on the side of the skin we have urticaria, acute erythema, and erythema nodosum; on that of the respiratory apparatus, asthma and emphysema; on that of the digestive organs, dyspepsia, hepatic colic, vomiting, constipation, and other intestinal affections, especially those incident to gout; on that of the renal organs, inadequate discharge of the urinary constituents, or the escape of abnormal substances, such as gravel and albumen. But above all in importance stand alterations of the circulatory system. Cardiac disease, especially aortic insufficiency with attacks of angina, is of common occurrence. The arteries of these patients present the well-known characters of sclerosis; with dilatation of the venous system, the patient suffering from varices or hæmorrhoids, or from sudden suppression of the latter or from disturbance of the menstrual function. The chronic intoxicating influence of alcohol and tobacco seems to play only a subordinate part in an outbreak of glaucoma. Examination of the eyes themselves frequently reveals the presence of hypermetropia, which in many cases is hereditary. Myopia is rare. Several affections of the eye have been noted, both in the adult and in the infant, as accompaniments of glaucoma: retinitis pigmentosa, for example, ectopia of the lens, embolism of the retinal arteries, coloboma, and aniridia. In several instances cancers occurring in arthritic patients with a neoplastic diathesis have terminated the life of the patient. Many occasional causes, chiefly acting on or through the nervous system, are mentioned, such as hunger, insolation, exposure to sudden cold or heat and other meteorological conditions, a fall into water, hernia, excitement of the emotions, as anger, grief, heated discussion, an electric shock. The cause is sometimes ocular or periocular, as the performance of lacrymal catheterism. The operation of cataract extraction or iridectomy in the opposite eye, a subconjunctival injection, the action of a mydriatic or of a vasomotor agent, especially of adrenaline, traumatism, blows on the eye, with or without luxation of the lens. Glaucoma at the end of an attack of influenza is not a rare event. It will thus be seen that the causes are very various and present nothing of a specific character or indicative of any special disease.

But the point on which Dr. Terson lays the greatest stress as

the chief condition almost always found in association with increased tension of the globe and all forms of glaucoma, is high blood-pressure, which he considers to be the result of sclerosis of the arterial system as a whole. After a polemic directed against Vaquez, who is of opinion that the ocular troubles are associated with increased tension, or at least with modification in the pressure of the cephalorachidian fluid, Terson sums up his own views in the following propositions :—

Permanently high arterial tension exists in many cases of glaucoma, especially in the chronic forms and in hæmorrhagic cases. Glaucoma is thus often associated, not only with a marked condition of arterial sclerosis, but with troubles connected with renal impermeability, which is a point to be noted, for the renal origin of persistent arterial hypertension is a plausible theory. A large number of exact observations still require to be made to determine the state of the arterial tension, when acute attacks of glaucoma supervene, as well as in cases of chronic glaucomatous condition, as at the commencement of primary glaucoma, since the hypertonic state of the blood pressure may be followed by normal pressure, or even by an hypotonic state. The reality and the mechanism of ocular hyper (hypo) tonisation by agents affecting arterial hypotonisation generally and of intracranial hypotension in particular have yet to be demonstrated. It is quite certain that glaucoma may coexist with normal blood-pressure, but it may also occur when the blood-pressure is below the normal if, owing to sudden reduction of the general blood-pressure, the tension within the eye is relatively increased—a view that has been expounded by Zimmerman. Still, it must be admitted that the state of the blood-pressure is one only of the elements of the pathogenic problem. In addition, we must admit the existence of some local ocular element, if only from a therapeutic point of view.

In another section Terson considers the relations of glaucoma to osmotic changes, pointing out that in most cases, although not in all, there is retention of the chlorides in the system owing to insufficiency or other defects of the renal organs, but he remarks that the laws of osmosis evidently are not *per se* capable of affording an explanation of the phenomena of glaucoma.

However acute the attack of glaucoma may be, it presents none of the characters of inflammation—the various congestive phenomena, exudations, effusion of albumen, and symptoms of irritation or of disturbance of the vasomotor system, the adhesions and pseudo-synechiæ due to the pressure of the lens against a highly congested iris can scarcely come under the head of inflammation. Various symptoms of this nature may be attributed to the contact of stagnant liquids undergoing decomposition from imperfect elimination, acquiring certain

osmotic characters and becoming impregnated with the products of cell disintegration may acquire toxic properties as will perhaps hereafter be demonstrated. Certain conditions must be present to cause flattening of the anterior chambers in cases of glaucoma. This is demonstrated by the fact that in essential phthisis of the eye we may see the iris glued to the cornea, and yet, instead of increased tension, there is hypotony, and the same, it may be said, occurs in the crises of true ophthalmomalacia.

The theories of the immediate cause of glaucoma have been very various. Manfredi in 1876 and many others have regarded the closure of the irido-corneal angle as the essential feature. The cyclo-choroidal and iridal tissues have always been observed to be sclerosed, and hence some, as Nuel and Benoit, have laid stress upon the absence of absorption by the iris. Some defect in the posterior filtration has been admitted by some. Others have suggested the influence of the ciliary and vasomotor nerves. Vascular troubles, both venous and arterial, but especially arterial, have been adduced as causes by Panas, and it is certain that intra-ocular arterial sclerosis is a prime agent in the production of hæmorrhagic glaucoma. It then co-exists with arterio-sclerosis, both cerebral and generalised, and it is not infrequently accompanied by arterial hypertension. In regard to glaucoma of long-standing it is not at present clear whether the sclerosed condition of the arteries is primary or consecutive to hypertony, constituting in the latter case the compensating sclerosis of Thoma, and being the result of the disorganisation and denutrition of the globe. Arterio-sclerosis of the retinal arteries has undoubtedly been observed in some cases of glaucoma consecutive to luxation of the lens, and in cases of corneal staphyloma with hypertony in chronic cases occurring in young subjects, and the arteries outside the globe are, as was long ago admitted by v. Graefe, also sclerosed. Degeneration of the vitreous humour, of the lens, and of the sclerotic may be passed over, since they can only be recognised with difficulty or not at all by the microscope, and cannot be regarded as a primary alteration. This holds in particular in regard to the sclerosis of the sclerotic described by Coccius and Cusco, which cannot be regarded as the principal cause of the glaucomatous process, although doubtless the defective elasticity of the sclerotic is unfavourable to normal conditions of tension, and the same may be said of the changes in the lens described by Priestley Smith, notwithstanding the *rôle* played by the lens in secondary glaucoma. Many other lesions described in books are only the result of atrophic or dystrophic hypertony, and why, it may be asked, need an organic lesion be always looked for at the commencement of glaucoma? Even in acute glaucoma the cause may be fugacious and the result of a mere transient state of congestion. The remark made by H. Müller to v. Graefe always holds good,

NEDERLANDSCH GASTHUIS voor OOGLIJDERS.

The inset represents Professor SNELLEN at the time of the Ninth International Congress of Ophthalmology, held at Utrecht in August, 1899.

namely, that "in the case of even considerable exudations from the inner surface of the choroid and ciliary body I have often been unable to discover any histological changes of importance."

In regard to treatment, the author observes that in rare cases recovery from an acute attack may occur as the result of the employment of pilocarpin and instillation of strong solutions of eserin 1—100 (*in oil*) frequently repeated, an instance of which he cites as having been under his own observation. Eserin, however, as well as adrenalin, sometimes does harm, but the addition of dionine in powder, especially when it produces great irritation and chemosis, will sometimes stave off an attack The effect of heat is variable, and the application of cold seems sometimes to be more beneficial: vesicatories are useless; bandages do harm. Myotics are of service not only from their action on the iris in expanding its tissue, but also from their vasomotor influence and their toxic action on the nervous system. The divergence between physiology and clinical observation is often complete, so that an agent which experimentally lowers the tension of the eye, may actually, in man at least, induce an attack of glaucoma. When all is said and done, iridectomy is still the sheet-anchor of the surgeon. HENRY POWER.

OBITUARY.

HERMANN SNELLEN, M.D.

BORN 1834: DIED 1908.

One of the Founders of Modern Ophthalmology.

Professor Hermann Snellen died in Utrecht, on the 21st January, at the age of 73 years. During the last four years Snellen had been suffering both mental and bodily illness, and he no longer took any part in active life. In fact, his career may be said to have ended in 1899, when he resigned the Chair of Ophthalmology that he had occupied for over 20 years in Utrecht University. That same year he still presided over the 9th International Congress of Ophthalmology which was held at Utrecht.

Hermann Snellen was born in the little town of Zeist, near Utrecht, where his father was a medical man of repute. He studied medicine in Utrecht, where he soon attracted Donders attention. Under Donders' mighty influence his first researches were chiefly on physiological subjects; as, for example, his

thesis (1857) for the degree of doctor of medicine: *Experimentelle Untersuchungen über den Einfluss der Nerven auf die Entzündung.* At that time the youthful science of ophthalmology was rapidly growing, and great discoveries were succeeding each other. One of the most far-reaching was the invention of the ophthalmoscope. It is interesting to recall the fact that Donders was the first to introduce the instrument into Holland. Soon a flow of patients came to him to be examined with the ophthalmoscope. Young Snellen was invited to see his private patients and to work with him in his polyclinic. This polyclinic later on developed into the first Dutch Ophthalmic Hospital, the *Nederlandsch Gasthuis voor Ooglijders*, of which Donders was the director and Snellen the first house-surgeon. In 1862 Donders accepted a professorship in physiology and could thereby no longer devote so much of his time to the eye hospital. That was the reason why, although continuing to be director and consulting ophthalmic surgeon to the hospital, he left the greater part of the clinical work to Snellen. From that time Snellen devoted himself entirely to ophthalmology with ever-increasing success. In the same year 1862 he published his famous Optotypes, based on the formula $V.=\frac{d.}{D.}$, which have been adopted all over the world, and are not yet superseded by any of the systems for the determination of visual acuity since published by others. Under his care the number of patients of the eye hospital rapidly increased and he got plenty of occasion for developing his operative skill. This great ability as an operator is evident from the many publications by himself or his pupils, on new methods of operation or useful modifications of pre-existing methods. The most generally known are his modification of the operation for entropion of the upper eyelid, and his sutures for the relief of ectropion. But his love for scientific work did not suffer from the multiplicity of his clinical interests. Together with Landolt he wrote the "Methods of Examination of the Eye" in the first edition of 1874 of Graefe-Saemisch *Handbuch der gesammten Augenheilkunde.* In 1880 this same paper was translated into French in the Wecker and Landolt *Traité d'Ophtalmologie.* Until the year 1877, ophthalmology was not officially taught in the Dutch Universities, at least not as a separate science. In that year, however, Snellen was appointed as the first professor of ophthalmology. Afterwards to each of the four universities in Holland, a professorship in our science was attached, and each chair was occupied by a pupil of Snellen. Until now the majority of Dutch ophthalmic surgeons have been trained by Snellen and have been his assistants. His lessons were always highly appreciated, and during a period some twenty years ago, many foreigners came to Utrecht to visit his clinic or to work under him for some time. In 1881 Snellen read a paper on "Sympathetic Ophthalmia, the mode of its transmission and its nature," before the International

Congress of Medicine in London. Three years later Donders vacated the Directorship of the Ophthalmic Hospital, and Snellen was appointed to succeed him. For some years already both had tried to have a new hospital erected, the old one offering too little room for the increasing number of in-patients, and not affording the accommodation necessary for the modern developments of the art of surgery. Donders did not live to see the new building completed, but Snellen by his extreme activity and energy succeeded in getting the necessary funds collected, and in 1894 a fine building on modern lines was erected. It was a great satisfaction to him to be able to show his colleagues the new hospital when in 1899 the Ninth International Congress met in Utrecht under his presidency. A picture of the building accompanies this sketch. But although still in possession of his full strength, he seemed to feel his approaching decline, and that made him resign his professorship in the same year, five years before he reached 70, at which the Dutch law compels the academic teachers to retire. Yet he did not consider the end of his academic career to be also the term of his scientific activity. The honour fell to him, in June, 1896, to deliver the Bowman Lecture before the members of the Ophthalmological Society of the United Kingdom, and he selected as his subject "Vision and Retinal Perception." He was elected an honorary member of the Society in July, 1896. For the second edition of the Graefe-Saemisch *Handbuch*, Snellen was asked to write the *Operationslehre*. But although he understood this subject thoroughly, coming old age made it extremely difficult for him to complete it as well as he should have liked, and, therefore, after the first part had appeared, he was compelled to ask the editors to transfer the work to others. His extensive private practice also began to weigh heavily on him, and he was forced to abandon it in 1904, three years before his death, hoping that complete rest would restore him sufficiently still to enjoy some peaceful years. His last appearance in public occurred in June, 1907, when his bust in marble was placed in the *Gasthuis voor Ooglijders*, offered to the governors by a committee of his former pupils. Contributions for this purpose were received from all parts of the world, many coming from English friends. But when in January last a serious illness overtook him, it was soon clear that he would not survive it, and on the 21st of that month he passed away, to the extreme regret of those who had ever known him. With him dies one of the most honoured and most beloved of that generation of famous ophthalmic surgeons that witnessed the development of our science from the very beginning. His name will live among our profession, not only for the active part he took in the development of ophthalmology, but just as much for his generous and amiable character, which brought under his influence everyone who had the advantage to come into personal

relation with him, either as a friend, a pupil, or a patient. Let us add, finally, that Snellen's married life was one long happiness. One of his sons, Hermann Snellen, junior, succeeded him in the professorship of ophthalmology in the University of Utrecht.

G. F. ROCHAT.

NOTES AND ECHOES.

International Congress of Ophthalmology.

As readers of THE OPHTHALMOSCOPE are aware, the Eleventh International Congress of Ophthalmology will meet at Naples from the 2nd to the 7th of April, 1909. The organising committee has issued a letter of invitation, from which it appears that four morning sittings will be devoted to discussions and one afternoon sitting to demonstrations, and that all communications must be in one of the official languages of the Congress—Italian, French, English, German, and Spanish. There will be two discussions: I. To fix the value of a lost or damaged eye with respect to an indemnity; and II. The unification of the measure of the visible force and unification of the notation of the meridians of astigmatism. The subscription has been fixed at twenty shillings for each member, and at 8s. 4d. for every other person attending the Congress in company with a member. Subscriptions, etc., should be sent to Professor Arnaldo Angelucci, R. Clinica Oculistica, S. Andrea Delle Dame, Naples. At the suggestion of this journal, Dr. Henry S. Lunn (5, Endsleigh Gardens, London, N.W.) proposes to arrange a tour to suit the convenience of British members of the Congress. According to the present programme, London will be left on Thursday, March 26th, and Rome will be reached on Saturday, March 28th, where members will spend four nights. Naples will be reached on Wednesday, the 1st April. A week will be spent in Naples, and after that members can return as they please within the validity of the railway ticket.

* * * *

Appointments.

IN accordance with an old and pleasant custom, the organising committee of the International Congress of Ophthalmology have conferred the honorary presidency on Professor Marc Dufour of Lausanne, and the vice-presidency on Dr. Landolt of Paris. Dr. J. H. Egbert has been elected eye and ear surgeon

at St. Joseph's Hospital, Wildimastic, Conn., Dr. L. P. Tingley ophthalmic surgeon to the New England Hospital for Women and Children, Boston, Mass, Dr. J. F. Crouch, professor of diseases of the eye at Baltimore Medical College, and Dr. C. A. Clapp, lecturer on diseases of the eye and ear at the same institution. Dr. G. Gonella has been appointed to the chair of ophthalmology in the University of Pisa. Dr. K. Scholtz has been recognised as *Privat-docent* of ophthalmology in Budapest. Professor Hirschberg has been elected an honorary member of the St. Petersburg Ophthalmological Society.

* * * *

Moorfields Hospital.

THE second annual dinner of the Royal London Ophthalmic Hospital, held on January 29th last, was attended by some sixty past and present students of the hospital under the genial presidency of Sir John Tweedy, consulting surgeon to the institution. Mr. Sturgis, chairman of the hospital board, and Mr. Holmes Spicer, dean of the school, replied to the toast of "The Moorfields Hospital and School." Sir John Tweedy's health was proposed by Mr. R. Marcus Gunn, senior surgeon to the hospital.

* * * *

Hunterian Oration.

THE annual Hunterian Oration of the Hunterian Society, London, was delivered on February 12th last by Dr. W. M. Ettles, who took as his theme "The Renaissance of Ophthalmology during the Hunterian Period." The Lecture was closely followed by an appreciative audience.

* * * *

Ophthalmia Neonatorum.

THE Science Committee of the British Medical Association has appointed a sub-committee of Dr. C. J. Martin, F.R.S., Dr. Buist, of Dundee, Dr. Cecil Shaw, of Belfast, Mr. Simeon Snell, of Sheffield, and Mr. Sydney Stephenson, of London, to consider the resolution passed in the Section of Diseases of Children at the Exeter meeting of the Association with reference to ophthalmia neonatorum. The latter was as follows: "That in the opinion of the Section of Diseases of Children, action should be taken by the Council of the British Medical Association with a view to the prevention of ophthalmia neonatorum." We wonder what has happened to a somewhat similar resolution unanimously passed by the Section of Ophthalmology at the Exeter meeting. At the last annual meeting of the American Ophthalmological Society, Dr. Lucien Howe presented a

resolution regarding the control of blindness from ophthalmic neonatorum, and a committee consisting of Drs. Howe, Jackson, and Callan, was appointed to consider the best form of action for the Society to take.

* * * *

As others see us!

The Optician and Photographic Trade Journal of January 31, 1908, under "Town and Country Trade Topics," gives the following delectable bit of information, which we fancy will please neither of the Birmingham ophthalmic surgeons whose names are taken in vain.

"Our Birmingham correspondent intimates that it is probable Mr. Basil Smart, of London, will shortly open sight-testing premises in that city (at the City Arcades). Dr. Wilfred Allport has gone into partnership with the well-known oculist, Dr. Priestley Smith. The optical trade in Birmingham is distinctly quiet just now."

* * * *

Annual Meeting of the British Medical Association.

THE seventy-sixth annual meeting of the British Medical Association will be held at Sheffield, England, in July next. One of our own order, Mr. Simeon Snell, ophthalmic surgeon to the Sheffield Royal Infirmary, is President-elect of the Association. His election to this important position is a popular one, and may indeed be said to mark an era, since this is the first occasion on which an ophthalmic surgeon has held the Presidency at any meeting in the United Kingdom. The Section of Ophthalmology will assemble at the University of Sheffield on Wednesday, July 29th, Thursday, July 30th, and Friday, July 31st, under the Presidency of Sir Henry Swanzy, of Dublin. Three subjects have been chosen for discussion:—1. Serum therapy of the eye; to be opened by Professor Axenfeld; 2. Diseases of the accessory sinuses; to be opened by Dr. A. Logan Turner and Dr. George Mackay; and 3. Colour-vision and its anomalies; to be opened by Dr. F. W. Edridge-Green. A good sectional meeting may be confidently predicted.

* * * *

Middlemore Prize, 1908.

THE Middlemore Prize for 1908, consisting of a cheque for £50 and an illuminated scroll, has been awarded to Mr. Simeon Snell, President-elect of the British Medical Association, for the general excellence of his work in ophthalmology. Best congratulations to Mr. Snell, than whom few men have done better work on the practical side of our specialty.

* * * *

Ophthalmologists in Germany.

FROM Boedner's *Medicinal-Kalender* for 1908, we gather that the medical practitioners of Germany number 31,416, and that specialists total upwards of 6,000 for the entire empire. Among the various departments of medicine, ophthalmology occupies the second place, numerically speaking, the first being taken by gynæcology. Surgery, curiously enough, comes sixth in the list.

* * * *

Ophthalmological Society.

AT a meeting of the Ophthalmological Society, held on February 13th last, on the proposition of Mr. C. Devereux Marshall and Mr. William Lang, a committee was appointed to determine the best way of testing colour-vision. As is the custom, the members of the committee will be nominated by the Council of the Society.

* * * *

The Optician again.

A very remarkable puff of an optician published in a Bromley (Kent) journal has fallen under our notice. This individual, "owing to the very great increase in his business," so the paragraph runs, "has purchased the most elaborate apparatus that could be procured, and he is consequently able to make the most thorough examinations, and to give (*sic!*) most valuable advice with regard to the visual organs in every respect." But that is by no means all. The optician in question, "in making these tests, which are so useful, not only with regard to the immediate powers of vision, but also in connection with the detection of every known form of disease of the eye," evidently desires to pose as an ophthalmic surgeon. We are not astonished, and can only hope that his surgical proclivities will not lead him into mischief, to say nothing of the clutches of the law. From the north we have received an objectionable sight-testing advertisement sent by a firm of Aberdeen opticians to a patient who had been referred to the firm to have spectacles fitted by an ophthalmic surgeon belonging to the same town. A representative of the firm, so we are informed, had also called personally on many of the same surgeon's patients. As our correspondent justly remarks, "this shows that medical men in future will require to be more cautious as to the firms they recommend."

* * * *

Bogus Prescriptions.

THE audacity of certain baser members of the optical trade is simply astonishing. Take the following as an instance: In June, 1907, a lady was ill-advised enough to consult a firm of opticians whose sphere of operations includes Bristol, Cardiff, and

Gloucester, and whose name is reminiscent of a Hebrew origin. The examination was concluded, and glasses were provided. The patient's husband then requested the prescription for his wife's glasses. After some demur on the part of the optician, the following precious concoction was handed to the expectant applicant:

	Sph.	Cyl.		Sph.	Cyl.	
Reading Distance.	+O.OD	—O.DO	AXIS. S.G.O.	+O.OD	— O.OD	AXIS. S.Q.O.

Remarks.

CONSTANT WEAR.

* * * *

The Ophthalmoscope.

THE next number (April 1st) of THE OPHTHALMOSCOPE will be mainly devoted to affections of the accessory sinuses as they affect the orbit and eyeball. Communications will be contributed by Dr. A. St. Clair Thompson, Mr. J. Howell Evans, Dr. Manning Fish (Chicago), Mr. J. Jameson Evans, Dr. Teillais (Nantes), and others.

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CONTENTS.

Original Communications—

1. StClair Thomson, M.D., F.R.C.P., F.R.C.S.—The Frequency of Orbital Manifestations of Nasal Sinusitis 228
2. J. Jameson Evans, M.D., F.R.C.S.—The Ocular and Orbital Complications of Disease of the Accessory Nasal Sinuses ... 235
3. Henry Manning Fish, M.D. A Study of 36 Consecutive Cases of Optic Neuritis 243
4. Sydney Stephenson, M.B.—Malignant Disease of the Accessory Sinuses: notes of three cases 253
5. J. Howell Evans, M.A., M.B., M.Ch. (Oxon.), F.R.C.S.—The Applied Topographical Anatomy of the Sinuses accessory to the Nasal Cavities in their relations to the Orbit and to its more important contents 259

Translation—

1. Dr. Teillais.—Empyema of the Maxillary Antrum, followed by Orbital Cellulitis and Atrophy of the Optic Nerve of the same side and Sympathetic Ophthalmitis 271

Current Literature—

I. The Orbital Veins 274
II. Blindness following Operations on the Nose 275
III. Blindness following Orbital Abscess 277
IV. The Cavernous Sinus 280
V. Removal of the Gasserian Ganglion 283
VI. The Accessory Sinuses 284
VII. Diseases of the Orbit 309
VIII. Injuries of the Orbit 313
IX. Pulsating Exophthalmos 317
X. Tumours of the Orbit 322

Reviews 336

Notes and Echoes 339

ORIGINAL COMMUNICATIONS.

THE FREQUENCY OF ORBITAL MANIFESTATIONS OF NASAL SINUSITIS.

BY

StClair Thomson, M.D., F.R.C.P.Lond., F.R.C.S.Eng.

PHYSICIAN FOR DISEASES OF THE THROAT, KING'S COLLEGE HOSPITAL; SURGEON FOR THE THROAT AND EAR IN THE SEAMEN'S HOSPITAL, GREENWICH; FORMERLY PHYSICIAN TO THE THROAT HOSPITAL, GOLDEN SQUARE, AND SURGEON TO THE ROYAL EAR HOSPITAL.

A glance through some of the most recent text-books on ophthalmology has confirmed me in the opinion that it is not sufficiently recognised that diseases in the accessory sinuses of the nose are a frequent, possibly the most frequent, cause of

Fig. 1.—Early and slight left orbital cellulitis, from ethmoidal retention.

inflammatory affections of the orbit. We still read of orbital cellulitis coming on "spontaneously," and of its being followed by periostitis, abscess, caries, and necrosis. Now the experience of the rhinologist is that it is not the cellulitis which results in periostitis, abscess, etc., but that a septic process in these neighbouring nasal cavities is the primary lesion, frequently

leading to suppuration, necrosis, and, finally, to orbital cellulitis. I find that chronic periostitis in many text-books on eye diseases is generally attributed to syphilis, rheumatism, and scrofula. Nasal suppuration is often not even referred to, and yet I am inclined to think that it is a very much more frequent cause of orbital periostitis than are the three causes enumerated. As for thrombosis of the cavernous sinuses, with its characteristic orbital manifestations, we still read in ophthalmic text-books that it is generally due to some injury, or traceable to some remote lesion, such as affections of the neck, lips, teeth, or throat.

FIG. 2.— Orbital cellulitis on the right side, from maxillary sinusitis.

A failure to recognise that nasal suppuration is often the true source of these primary manifestations may have disastrous results. It may induce an agnostic view as to the pathology of the affection. Thus, I find it mentioned in some text-books on eye diseases that although the thrombosis of the cavernous sinus is doubtless of septic origin, it is often impossible to trace the true source of the toxæmia. Still more dangerous is the instruction simply to "keep a careful watch for cerebral symptoms," when vigilance directed to the nasal cavities might avoid any such catastrophe.

Chronic suppuration in the accessory sinuses is most frequently

manifested by nasal suppuration. Naturally, such cases apply direct or are referred to a rhinologist. But it is far from uncommon for sinusitis to manifest itself primarily by some orbital symptom. These latter cases are apt to apply directly to a general surgeon or to an ophthalmologist ; the patients frequently deny the presence of any nasal suppuration, and in some cases it is, indeed, entirely absent. I think this helps to explain why these orbital inflammatory affections come under the observation of ophthalmologists, and why their treatment has been somewhat overlooked by rhinologists. The notes of a few recent cases

FIG. 3.—Marked right orbital cellulitis, from suppuration in the frontal, ethmoidal, and maxillary cavities.

will not only confirm this but will illustrate the great variety of accessory sinus affections which may underlie an orbital symptom.

The woman, whose photograph is shown in Fig. 1, applied for relief with a puffy, tender swelling of the left upper eyelid. She had more or less constant pain in the supra-orbital region, neuralgia, and marked tenderness of the inner canthus. The condition had followed influenza. Such a case of slight orbital cellulitis might be regarded by many as a primary affection. There was no pus to be discovered in the nose, but the floor of the frontal sinus was so tender that I thought it wise to make an exploratory opening into the cavity. It was quite healthy.

The maxillary sinus was punctured, washed out, and found to be clear. It was therefore evident that the condition was due to retention in the ethmoidal labyrinth, and after amputation of the anterior end of the middle turbinal, and suitable general treatment, the condition entirely cleared up.

In the case of Fig. 2 there was a puffy, tender, and slightly congested swelling of the right lower eyelid and inner canthus. The patient was referred to me by my colleague, Mr. L. Vernon Cargill, under whose care she was for congenital lues. She was found to have suppuration of the right maxillary sinus, and on treating this, her orbital symptoms disappeared.

FIG. 5.—Fistula left by an incision into an orbital abscess. It originated from suppuration in an orbito-ethmoidal cell, in a patient suffering from pan-sinusitis.

The man in Fig. 3 came under the care of my colleague, Mr. S. Mayou, for orbital cellulitis. It will be seen that the right eye is completely closed up by the swelling and congestion of the upper eyelid. He had complained of pain for five days; there was proptosis, and pain on looking upwards. The movements were not limited; the upper edge of the disc was blurred, and the veins full. The temperature was normal. This case might have been regarded as a primary orbital cellulitis, but Mr. Mayou, on obtaining a history of nasal trouble, referred the patient to my clinic. We found extensive

ethmoiditis and polypi of the middle turbinal. This was cleared out under chloroform, and the orbital symptoms promptly subsided. Further nasal investigation then showed that the patient was a victim of chronic suppuration in both the frontal and maxillary sinuses of the right side.

A very instructive case is illustrated in the Fig. on page 292. It is the photograph of a female, aged 18, who consulted Mr. Willoughby Lyle at the Royal Eye Hospital for an abscess pointing at the inner canthus of the left eye. A month previously she had had influenza and pain round the left eye. The eye "swelled up and closed in a single night." Under chloroform, the abscess was opened, and a large quantity of pus evacuated, which appeared to come from a deep situation in the inner wall of the orbit. A probe was passed into the cavity, and bare bone

Fig. 6.—Thrombosis of the cavernous sinus, due to suppuration in the right sphenoidal accessory cavity.

felt. When Mr. Lyle kindly referred this patient to my clinic, some three weeks from the commencement of her illness, there was no swelling or œdema of the left eyelids, but a congested wine-like staining of all the upper eyelid and around the inner canthus, where there was a fistulous opening secreting pus. A probe entered this for one inch, and bare bone was

felt. This case might very well have been looked upon as a case of orbital cellulitis leading to necrosis; whereas, the evolution was entirely in the opposite direction. Transillumination, exploratory puncture, and other intra-nasal investigations proved the presence of pus in the frontal, ethmoidal, and maxillary cavities of the left side. With intra-nasal treatment—and without further surgical interference—a complete cure was effected.

Fig. 5 illustrates a case which at first sight seems very similar to No. 4. Seven weeks before coming up to my clinic, the right eye had swollen up, a doctor had lanced it and let out yellow matter, which had been escaping ever since. The fistula represented in the photograph did not communicate with the frontal sinus, but with an orbito-ethmoidal gallery. Instead of clearing up under simple treatment, the case proved most complicated and intractable, and the patient was under treatment for many months, as we discovered pus in every one of the accessory cavities of her nose. Yet this patient had never complained of nasal suppuration, and when pressed on the point would only admit that for some years she had been annoyed with a little postnasal discharge. The case illustrates how an orbital cellulitis may be the first thing to call attention to an extensive and serious pyogenic infection of all the nasal accessory sinuses.

A patient may present all the appearances of vigorous youth, may even deny any symptom referable to the nose or throat, and yet the development of the orbital symptoms of thrombosis of the cavernous sinus may be the first indication of suppuration in an accessory sinus. Fig. 6 shows the condition in a healthy girl of 16 years, who enjoyed excellent health until seized with sickness, shivering, and swelling of the eyelid. It will be seen from the photograph that there was exophthalmos and chemosis. Her other ocular symptoms are fully described in an article I contributed to the *Transactions of the Medical Society of London*, vol. 29. 1906.* In this patient I found suppuration in her right sphenoidal sinus, and she died in spite of opening and free drainage of that cavity. The ætiology of thrombosis of the cavernous sinus appears to have escaped detection. A very complete bibliography of 170 cases reported in literature has been collected by E. W. Dwight and H. H. German†. Unfortunately, the value of these observations is greatly diminished by the absence in nearly all cases of a clinical or *post-mortem* examination of the nasal accessory sinuses. In addition to my own case (Fig. 6), I have collected sixteen others in which thrombosis, with or without meningitis, has been proved by *post-mortem* examination to have directly originated from pus in the sphenoidal sinus, and I am inclined to think that the majority of cases of this very fatal disease can

*For abstract see page 287 present number of THE OPHTHALMOSCOPE.
†*Boston Medical Journal*, May 1st, 1902.

be traced to pus in the air-spaces connected with the nose.

The above cases are only some typical examples taken from many others recently occurring in my practice, but they serve to show how frequently orbital symptoms may depend upon sinusitis, and how trifling the nasal symptoms may be. Many patients, as in the case of Fig. 5, may make no complaint of a trifling postnasal discharge ; some, as in the case of Fig. 6, may deny its presence ; while others, as in Fig. 1, may present no nasal suppuration at all.

The appropriate treatment of purulent disease in the accessory sinuses is a wide and by no means an easy matter. Recent cases, as in that of Fig. 1, may subside under the simplest measures and without ever requiring operation. Where there is pus formation of recent origin, as in the instance of Fig. 2, the evacuation of pus from the orbital phlegmon may be all that is necessary to bring about resolution. Intra-nasal relief to obstruction (Fig. 3) may cause disappearance of orbital cellulitis, but in such a case the detection of a latent empyema in the frontal and maxillary sinuses is of importance to the future welfare of the patient. Anyone who lightly undertook the treatment of an orbital abscess, as in Fig. 5, would, in the absence of a careful inspection of all the accessory sinuses, be surprised to meet such an inveterate condition to deal with as that of chronic pansinusitis. Finally, the discovery of pus in the sphenoidal sinus, or in the ear, would have great importance in deciding the prognosis and in initiating treatment for a lesion so fatal as thrombosis of the cavernous sinus.

Regarding the subject from the point of view of the rhinologist, I am inclined to ask if we should not cease to regard "orbital cellulitis" as a primary affection. Infections from the skin and conjunctiva may be the origin of the condition in a certain number of instances, but, for the remaining majority, I think we should look to the nose and its accessory sinuses for the source of sepsis.

The study of pyogenic processes in the accessory sinuses of the nose is a recent development of rhinology. Much valuable work has been done on this subject, but much still remains for investigation. Nasal suppuration presents great varieties in its symptoms ; some may be so well marked that it is easy to locate the offending sinus ; in other instances the symptoms may be vague or remote. The treatment is not infrequently simple and satisfactory in its results ; but sometimes suitable measures are difficult to plan, tedious to carry out, and not free from grave danger to life.

I venture to draw the attention of ophthalmologists to the frequency with which nasal sinusitis may produce orbital manifestations, in the hopes that, in association with rhinologists, more may be done for the elucidation of a difficult but most important subject.

THE OCULAR AND ORBITAL COMPLICATIONS OF DISEASE OF THE ACCESSORY NASAL SINUSES.

BY

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IN the space at my disposal I can give only a brief account of some cases which I think are fairly typical of the complications of sinus disease likely to be met with in ophthalmic practice.

Many of the notes are somewhat incomplete from the ophthalmic side, and I have made no effort to include a full account of the rhinological findings, the latter being beyond the scope of this article.

I propose to give a short account of the cases which have come under my notice as complications of diseases of the maxillary antrum, frontal sinus, ethmoidal cells, and sphenoidal sinus, and also to add a few words on traumatism as a cause of hemianopsia.

I.—Diseases of the Maxillary Antrum.

The following case shows the necessity of making a careful examination of the nasal sinuses in all cases of disease of the lacrymal sac.

CASE 1.—G. K., aged 30 years, presented himself with a left-sided purulent dacryocystitis of some two years' duration. The sac was markedly distended and the discharge was profuse. He had already been under treatment at an ophthalmic hospital for over a year, and so I decided to excise the lacrymal sac. Notwithstanding the free discharge—purely pneumococcal in origin—the skin wound healed by first intention and the stitches were removed on the third day, but on the fifth day there was again a profuse purulent discharge in the conjunctival sac. It was now found that the deeper part of the wound was open and a probe passed freely into the nose and came to a sudden stop on the floor of the antrum. Examination of the antrum showed an antral empyema, which was drained by Dr. Glegg, and the patient made a speedy recovery, and had no further lacrymal trouble.

Orbital cellulitis is not an uncommon complication of antral disease, and the optic nerve is very liable to be damaged in consequence. The following case is interesting owing to the fact that an intense orbital cellulitis affecting the optic nerve along with the rest of the orbital contents need not necessarily lead to atrophy of the nerve or to loss of sight.

CASE 2. --J. M., aged 21 years, was admitted into the Birmingham Eye Hospital suffering from an extensive alveolar abscess on the left side, and a severe left orbital cellulitis (Fig. 1). The abscess had been opened and was discharging freely. The two left upper bicuspids and upper first molar were carious. He had had toothache and "gumboils" in that region off and on for two years. Temperature, 100°F.

The carious teeth were extracted, and as it was found that pus discharged through the socket of the first molar, the opening was enlarged and the antrum washed out and drained through it. The alveolar abscess was also freely drained. At the upper part of the latter some bare bone was felt.

Two incisions were made into the orbital tissues through the upper lid, and two through the lower lid. No pus was found at first, but on working in with probe and sinus forceps almost to the apex of the orbit, pus was evacuated through the lower and inner incision.

Considerable quantities of foul pus continued to drain through this incision, but practically none through the others. It was difficult to examine the fundus, owing

to the proptosis and chemosis, but there was no optic neuritis in the right eye. L.V. = ? P.L. There was little or no improvement in the patient's condition for a week, and then the tense swelling of the orbit began to subside, and temperature fell to 98°F., 99°F., and in a month the antrum was quite free from pus. The discharge from the alveolar abscess stopped a couple of days later. The proptosis also entirely disappeared. L.V. = $\frac{6}{18}$. Field nearly full. A small collection of pus now appeared on the cheek below the outer and lower part of the orbit, and, on opening it, bare bone was found at the bottom of the abscess. This could not be removed at the time, and the cavity had to be drained until a scale of dead bone could be removed five months later. No further trouble. R.V. = $\frac{6}{6}$ L.V. = $\frac{6}{9}$ c −0·50 D.cyl. axis 180°. Fundus normal each eye. Fields full.

Fig 1.

The antrum is rudimentary in early infancy, but it is a mistake to think that it, or at any rate the superior maxilla in that region, may not be diseased for that reason. The following case, which was under the care of my colleague, Mr. Henry Eales, is instructive :—

Case 3.—Florence S., aged 8 weeks. When admitted, was suffering from left orbital cellulitis, with much œdema and congestion of the left malar region. Incisions were made into the orbital tissues through the upper and lower lid. The incision in the lower lid opened up a suppurating cavity communicating through the orbital floor with the nose. A drainage tube was inserted through this opening into the nose. The patient made a quick recovery, but there was some atrophy of the optic disc.

It is possible and even probable that neither this case nor case 8 is a true accessory sinus disease, but the clinical symptoms and course of the case seem to be just like those of sinus disease, and they have consequently been included in this paper.

It is rarer to find a maxillary empyema associated with optic neuritis without any other inflammatory changes in the orbit. The following case seems to be of this type.

Case 4 (under the care of Mr. Henry Eales).—Maria A., aged 20. Suffered for some years from carious teeth. Five days before admission had pain in the left eye, one day later lost the sight of the left eye.

On admission : pain on movement of left eye, which was very tender to touch. Left optic neuritis. Papilla swollen 2·5 D.; veins engorged : no reaction of pupil to light. Convergence and consensual reflexes normal. L.V. = no P.L. R.V. = $\frac{6}{6}$.

Examined by Dr. Glegg, she was found to have a left maxillary empyema, which was drained; no disease of ethmoid or sphenoid found. A week later L.V. = no P.l. Optic neuritis still marked. Hæmorrhage on inner side of disc. A month after admission, right field became contracted about 30 deg. and R.V. = $\frac{6}{1}$. Left eye *in statu quo*. Patient still under treatment: the right eye shows pallor of disc but no optic neuritis and there is no improvement in vision or field.

I cannot recall a case where oculomotor paralysis or glaucoma could be ascribed to maxillary sinusitis.

II.—Diseases of the Frontal Sinus.

Most of the cases of frontal sinusitis which have come under my observation have shown no definite ocular affection beyond displacement of the globe, headache, and asthenopia.

The following case of growth in the region of the frontal and ethmoidal cells was associated with a lesion of the optic nerve:—

Case 5.—William R., aged 46 years. Hard swelling in the inner angle of the right orbit; loss of sensation over the right half of the front part of the head (area supplied by the supra-orbital and supra-trochlear nerves). Right eye proptosed and displaced slightly outwards. The swelling at inner canthus extends backwards along the inner wall of the orbit, and its posterior part cannot be defined. Movements of globe restricted, especially upwards. Fundus normal each eye. R.V. = $\frac{6}{6}$, L.V. = $\frac{6}{6}$. Patient had marked œdema and some discharge from right nostril. There was a little epiphora on the right side. There was no history of syphilis. Patient remained under observation and under anti-syphilitic treatment for a month, during which time the growth and proptosis increased; fine vitreous opacities appeared in the right eye, and the disc became a little grey, with a suspicion of atrophy. R.V. = $\frac{6}{24}$. L.V. $\frac{6}{12}$. The right field became contracted, especially on the nasal side. There was no apparent lesion to account for the reduced vision of the left eye. The patient refused operative interference, and I lost sight of the case.

III.—Diseases of the Ethmoidal Sinuses.

The ocular complications of ethmoidal disease are perhaps more varied than those due to disease of the other accessory sinuses. We are well acquainted with the usual displacements caused by empyema of the anterior group of ethmoidal cells invading the orbit. But that they may not take what may be regarded as the classical course is shown by the following cases:—

Case 6.—Mrs. L., aged 63 years. Left eye proptosed and lids congested, and surrounding tissues red and œdematous. Severe pains and tenderness in left eye and temple. Left cornea showed nebulæ, the result of ulceration 12 years ago. No view of fundus. L.V. = p.l. She gave the following history:—for two or three years before admission she had had a discharge from the left nostril; this was profuse in the mornings. She had had pain in the forehead and temple for some time, and this became worse on stooping.

Four days before admission, she experienced a sudden violent throbbing pain in the left eye and temple, shooting down to the throat and chest. This pain was so severe that she fainted several times, and it caused loss of appetite and vomiting after partaking of food. The eye and orbit assumed the appearance they presented on admission, but the disease was diagnosed and treated as "erysipelas." Temp., 101° F. On admission, an abscess was found pointing underneath the left external angular process. This was opened, and a large quantity of foul-smelling pus evacuated. A probe could be passed horizontally inwards and backwards across the roof of the orbit for a distance of 1½ inches (Fig. 2). The cavity was drained, but the drainage tube was continually getting blocked, and symptoms consequently often recurred. While washing out the sinus in the roof of the orbit, it was found that the fluid ran down the throat when her head was leaning backward, and into the nose when it was leaning forward. She had frequent attacks of sneezing which blew the drainage tube out of her orbit. The discharge from the orbit now became greatly diminished, and correspondingly increased from the nose. She was transferred to Mr. F. Marsh at the Ear and Throat Hospital, where the posterior ethmoidal cells were cleared of a large

quantity of pus and *débris*. Her condition improved greatly after this, but a month later she returned, complaining of swelling of the eyes, and pain in the forehead and root of the nose. She then had the sphenoidal cells curetted.

Even after this, the orbital sinus continued to discharge small quantities of thick pus, and the swelling of the orbital tissues and the proptosis, although much less, never entirely disappeared. Her general health was much improved at the time.

The right field became contracted 15°-20°, and a year later she developed hæmorrhagic retinitis, probably of renal origin. She died of renal and cardiac disease about six years later.

Fig. 2.

Very similar and likely to have the same result is :—

Case 7.—Mary D., aged 46 years, whose "right eye had been coming out" for six years. The prominence could sometimes be diminished by pressing on the eye, by which means she could "burst some little pipe in the nose" and cause a discharge from the right nostril.

The right eye was displaced forwards and downwards, and slightly outwards, and rested on the inferior orbital margin. Central nebulæ and myopic astigmatism and diffuse atrophy of choroid in each eye. V. = $\frac{6}{6}$ with correction : fields full.

In the roof and outer part of the orbit a large mass of bony hardness could be felt. The posterior boundary could not be defined.

An exploratory incision revealed a mucocele which was pointing under the external angular process.

She was transferred to the Ear and Throat Hospital, but refused further treatment.

The following case of suppuration in the anterior ethmoidal region is interesting from the point of view of its history, the age of the child, and the ocular and other complications.

Case 8.—Cissie D., aged 2 years. The mother said the right eye became swollen and red two weeks after an attack of measles. For a fortnight the mother had assiduously applied poultices of parsley and milk to the eye.

On admission, the right cornea was found to be completely destroyed and the eye hopelessly disorganised and submerged in pus.

The lids were congested and much swollen, and in the upper lid, on the inner side, there was a large sinus discharging pus and a similar one in the lower lid near the inner canthus. The child also suffered from right otitis media and right-sided facial paralysis. Examination of the pus from the sinuses showed a practically pure growth of pneumococcus. Fluids passed into the nose when syringed through the sinuses.

Two days after admission, the child developed left-sided lobar pneumonia, with some consolidation of the right base. She made an uninterrupted recovery from the pneumonia, and the sinuses healed up in less than two months with no other treatment than gentle syringing with mild antiseptic lotions.

In the cases which have come under my observation the ocular complications of *posterior* ethmoidal suppuration have been more complex and difficult of explanation than those associated with anterior ethmoidal suppuration. Most of the cases that come to the ophthalmic surgeon complain of loss of sight in one eye, and often of pain around and behind the eye. Examination of the fields of vision may show that the reduced visual acuity is associated with a central scotoma, or a defect in one or both fields on the temporal or nasal sides. The fundus-findings may be negative, and the case may be indistinguishable from an ordinary case of acute retro-bulbar neuritis, except for the condition of the nose. In my opinion, cases which present irregular defects of the peripheral field are more typical of sinus disease, and are probably explained on the supposition of canalicular compression or neuritis. Other cases (scotomatous) are probably of toxic origin. When due to compression pure and simple, the recovery of vision and field after operation on the affected sinus or sinuses is very prompt. The following case illustrates that fact. I am indebted to my colleague, Mr. E. W. Wood White, for the use of the notes.

Case 9.—Harry P., aged 23 years, attended the Birmingham Eye Hospital complaining of having suddenly lost the sight of the left eye ten days previously. This was accompanied by pain in the head and around and behind the eyes, and this was present on admission. Vision improved a little during the daytime and became worse at night. There was a discharge from the left nostril. There was nothing abnormal to see in either eye. R.V. = $\frac{6}{5}$ c. + 3·50D. L.V. = hand movements. R. field full, but small scotoma for blue and green—none for red. Left field limited to a small area outside the fixation point (*see* fig. 3).

The case was transferred to Mr. B. Seymour Jones, who was unable to get a view of the middle and superior meatuses, owing to œdema and congestion of the middle turbinate. He resected the posterior end of the middle turbinate. This was immediately followed by a slight expansion of the left visual field (*see* fig. 3). A fortnight later, he opened the posterior ethmoid cells with Hajek's hooks and Grünwald's forceps, and cleared out some purulent *débris*.

Next day the greater part of the temporal field had returned (*see* fig. 3), and three days later the field was full. L.V. = $\frac{6}{6}$ c. + 3 D.sph. He had a good deal of aching at the back of the eyes after this and some discharge from the left nostril.

A week later L.V. = $\frac{6}{15}$ c. + 3 D.sph.

In another week L.V. = $\frac{6}{6}$ c. + 3 D.sph.

In other cases the causal relationships between the ocular and nasal phenomena are not so evident. In the following case there can be little doubt that the eye trouble was of nasal origin, and yet the rhinological examination was negative But this does not exclude the possibility of a closed empyema, producing the symptoms described either by pressure or by toxæmia or by both.

Case 10.—Hetty W., aged 40 years, suffered great pain in and at the back of the left eye and in the left temple for three or four years before admission ; symptoms worse the last three months. Marked tenderness over left ethmoid. Left eye proptosed and showed evidence of slight chronic iridocyclitis, *viz.*, discolouration of iris, posterior synechiæ, vitreous opacities, *plus* tension, and some cupping of the disc.

L.V. = < $\frac{6}{60}$. Field very contracted.

R.V. = $\frac{6}{12}$. Considerable general contraction of the field.

Examination of the nose showed no evidence of any definite disease.

Two months after admission, she felt something give way in her nose and she had a discharge from the left nostril. The tenderness over the ethmoid, the headache, and general health were much improved after this. L.V. = $\frac{6}{6}$. R.V. = $\frac{6}{12}$. Unfortunately, there was no improvement beyond this and the fields are slightly smaller. She is still under treatment, and will probably pay another visit to the Ear and Throat Hospital.

Temporal contraction of one or both fields is apt to be regarded as a sign of sphenoidal disease, but clinical experience and Onodi's wonderful anatomical investigations prove that ethmoidal disease may quite as well give rise to such a visual defect.

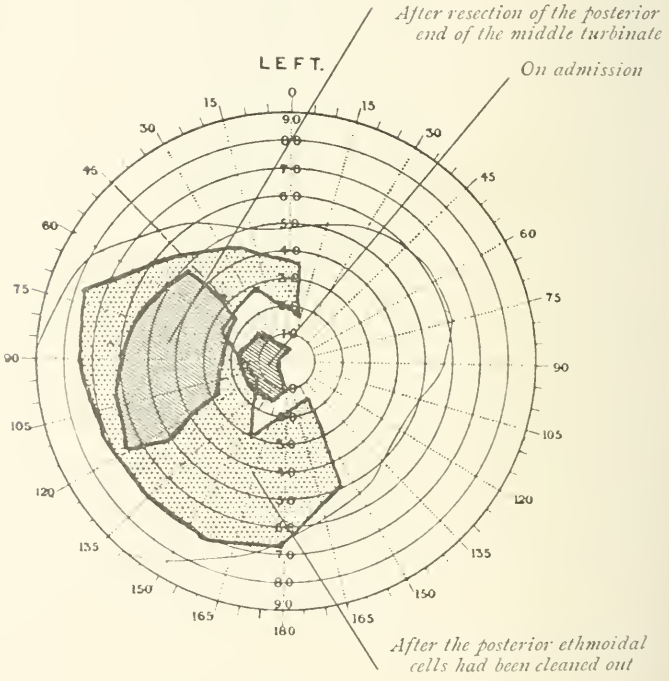

FIG. 3.

The following case illustrates this fact :—

CASE 11.—Samuel A., aged 43 years, suffered from nasal obstruction for years : discharge and hæmorrhage from left nostril (for which it was plugged) six months ago, followed by partial blindness in left eye.

L. : Nasal pallor of disc. Fine grayish-yellow dots at Y.S.

L.V. = $\frac{6}{6}$. R.V. = $\frac{6}{6}$. Fundus, normal. L. Field, temporal hemianopia. R. Field, full.

Nose : L. : Pus in ethmoidal cells. R. : Globular distension of middle turbinate.

Patient is now under treatment for the nasal trouble.

I have had no opportunity of examining a case in which the oculo-motor nerves appeared to be affected as the result of ethmoidal disease, except the case reported by Glegg and Hay in the *Lancet*, September 30th, 1905.

IV.—Diseases of the Sphenoidal Sinus.

I do not know that there is anything characteristic about the ocular complications of sphenoidal diseases. Onodi's investigations show that as far as the relationship to the optic nerve is concerned, disease of the posterior ethmoid group may produce the same effect as disease of the sphenoidal cells. Indeed, the following case (under the care of Mr. Henry Eales) in which it appears that the left posterior ethmoidal and the right sphenoidal cells were affected, goes to show that the result is practically identical.

Case 12.—Amy M., aged 34 years, dressmaker, gave the history that she had been unable to see to work for six months. No trouble with nose. Pupils sluggish to light. No pain on pressure or on movement of globe. Left palpebral fissure smaller than right.

R.V. = $\frac{6}{18}$, $\frac{6}{9}$ partly c. + ·75 D.sph. L.V. = $\frac{6}{36}$, not improved. Temporal contraction of both fields. Large central scotoma in the left eye. Fundi normal. No nasal disease found on examination of the nose.

Fortnight later, R.V. = $\frac{6}{18}$ partly, not improved. L.V. = $\frac{6}{60}$ partly.

In another fortnight R.V. = $\frac{6}{12}$ partly, L.V. = $\frac{6}{60}$. L. field cannot be taken.

A fortnight later, R.V. = $\frac{6}{12}$, L.V. = $\frac{6}{24}$.

Colour scotoma for blue 1° in right eye, and in the left eye 1° white, 2° blue, 10° red and green. Vision and fields remained much the same during the following month, during which time Mr. B. Seymour Jones operated seven times on the nose, removing polypi from the left posterior ethmoid cells and opening up a purulent right sphenoidal sinus.

After being under observation for close on a year, the following notes were made :—R.V. = $\frac{6}{12}$ partly, $\frac{6}{6}$ partly c. + ·75 D. L.V. $\frac{6}{18}$ partly. R. disc pale. L. disc normal. Retinal veins full in each eye. No colour scotoma. Bitemporal hemianopia.

V.—Traumatism.

On account of the extreme thinness of the walls of the optic canal it has been suggested that fractures and fissures are somewhat easily produced by blows on the orbital margins. Hölder's *post-mortem* observations seem to have established this fact. It still remains to be shown, however, what clinical symptoms such fissures or fractures would give rise to. I have elsewhere (*British Medical Journal*, July 8th, 1905*) drawn attention to the frequency with which one-sided temporal hemianopia follows blows on the external angular process. This suggests the desirability of caution in the use of the hammer and chisel in performing Krönlein's operation. I am, however, not convinced that a fissure or fracture of the optic canal is necessary for the production of these symptoms, and if present it is not of necessity accountable for change in the nerve.

Elsewhere, I ascribed the hemianopia to a concussion of the unprotected nasal side of the nerve against the inner wall of the optic canal. The lower part of the nerve is also more or less unprotected (by the artery) in the optic canal, and a vertical blow over the eyebrow should occasionally result in damage to the inferior fibres of the nerve.

The following, among others of which I have notes, shows that such a result is possible and should be taken into consideration in the performance of operations, such as Killian's :—

*For abstract see The Ophthalmoscope, 1905, p. 564.

CASE 13.—George E., aged 40 years, consulted me for an inflammatory affection of the right eye. Right field normal. The left eyebrow showed a scar at the junction of the middle and inner thirds, the result of a blow from a hockey stick twenty years ago, since when the sight of the left eye has been in the state it is in now. L.V. $= <\frac{6}{6}$ but with head thrown back and to the right. L.V. $= \frac{6}{9}$, not improved. The upper part of the field was absent, there was also considerable general contraction (*See* chart fig. 4).

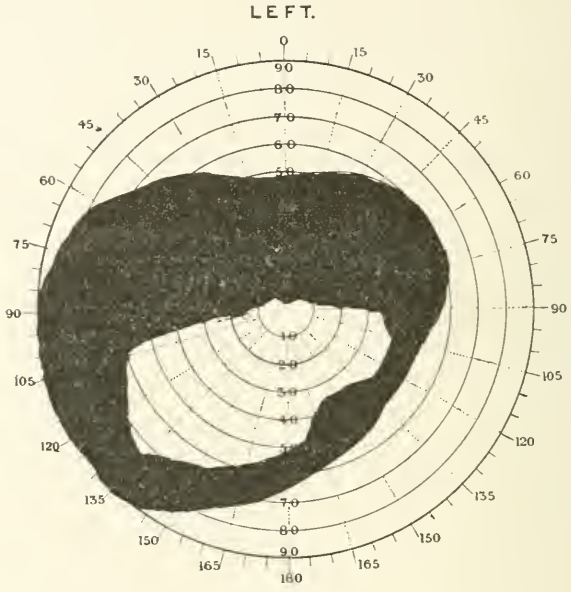

FIG. 4.

Conclusion.—I trust these notes will help in the elucidation of the numerous points in discussion as to the relationship between nasal and ocular diseases. There are many other questions which I have not touched on, as one's experience is too short and too limited. It is evident that the possibility of nasal disease should always be borne in mind in all cases of retrobulbar neuritis, and especially in unilateral or bilateral restriction of the peripheral visual fields. It is only by the combined observations and investigations of the rhinologist and ophthalmologist that many of the questions can be settled. It is hopeless for the ophthalmic surgeon to attempt to decide as to the presence or absence of nasal disease, as its discovery may involve several preliminary operations. It will be observed that the relief of the nasal empyema by operation does not necessarily lead to recovery of sight. On the other hand, I am convinced that many of the ordinary scotomatous type of cases of retrobulbar neuritis are of nasal origin, and recover either spontaneously or under the ordinary medicinal treatment. The extreme variability in the nasal and ocular symptoms, in the progress and results of the disease and of its treatment are a few of the many questions that still remain to be explained and to be demonstrated pathologically.

A STUDY OF THIRTY-SIX CONSECUTIVE CASES OF OPTIC NEURITIS:

Nasal accessory sinus disease present twenty-six times. Treatment of the sinuses followed by improvement of the ocular condition in fifteen cases, including therein three bilateral cases restored to normal.*

BY

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The study of affections of the optic nerve in connection with diseases of the nasal accessory sinuses has aroused during the past few years unusual interest in the ophthalmic world. Different authors have advanced the claim that sinus disease can induce an optic neuritis, reporting clinical cases in evidence thereof; yet this causal relationship appears still to be doubted by some—the two lesions, when noted, being looked upon as merely coincidental. A careful search of the literature, however, has disclosed the existence of about 100 cases of both primary and secondary optic neuritis with all degrees of visual disturbance, from a papillitis with no reduction in vision to total loss of light perception. These cases, furthermore, show that each one of the nasal sinuses, the frontal and maxillary, as well as the ethmoidal and sphenoidal, can cause an optic neuritis; a statement doubted by many to-day, owing to the generally accepted theory that the nerve lesion is due solely to an extension by continuity. Time allows the mention of a few cases only. Richet, by opening the frontal sinus, restored normal vision to an eye blind for more than a month, and Fliess' patient was able to "read the finest print" after being "about blind" for months. The vision in Hajek's case, reduced to counting fingers, returned to normal, and in Despagnet's, one of maxillary empyema, it improved from 1/50 to normal. Characteristic of the results in these cases is the rapid disappearance of the nerve œdema and the consequent improvement in vision; thus, Coppez's patient, with vision of 1/20, had normal vision on the eighth day; Brawley's vision of 1/5, normal fourth day; and Würdemann's 1/6, normal a few days later. Mendel's patient came with vision reduced to counting fingers and was "stone blind" at the time of the operation; light perception appeared the same day, and vision finally equalled 2/3. Bourgeois improved the vision from 1/50 to 1/4 on the third day, and later to normal. In case No. 19 of hæmorrhagic neuro-retinitis, drainage of the frontal sinus, by introducing a probe into the fronto-nasal canal, improved the vision from hand movements to 1/5 in 48 hours' time. In addition to the cases of amaurosis already mentioned, one was reported by Wolge,

* Section of Ophthalmology, Annual Meeting of the British Medical Association, Exeter, *July*, 1907.

wherein "vision returned" in an eye that was "blind." In a personal case, with total loss of light perception, vision improved to counting fingers, when on discovering a sarcoma of the sphenoid, the treatment was discontinued, and the patient died a few months later.

Risley's case is of special interest, as in 1896 he noted an optic neuritis with V. equalling 1/2. Four years later, the vision, reduced to 2/50, improved after sinus operation to 1/2. Case No. 3, with bilateral papillitis, was restored to normal, although treatment for three years by eminent ophthalmologists had been without result. Another bilateral case by Brawley, with vision 2/50 in each eye, was restored to normal. In each of these last two cases an unfavourable prognosis has been given elsewhere.

Before discussing this question, it may be well to devote a few minutes to a study of sinusitis—its frequency, tendencies, and some of its symptoms. The most common type of acute sinusitis is a "cold in the head," with its congestion and feeling of fulness or heaviness, often accompanied by a greenish nasal discharge, That is sinusitis, pure and simple, the most wide-spread of troubles rather than a rare condition.

Acute sinusitis tends to heal spontaneously, as noted by Semon, Hajik, and others, whether it be a simple cold in the head or the more or less purulent initiatory coryza of the infective diseases.

Sinus disease is usually bilateral, and hence should be thought of in cases of double optic neuritis, as well as in those confined to one side.

Chronic sinusitis may lie dormant for months or years, only to become suddenly manifest at any time; these exacerbations are especially apt to appear during the inclement weather of spring and winter that predisposes to colds.

Dizziness is a very suggestive symptom—it was present in 19 out of the 26 cases.

Pain, generally supposed to be severe, is mild in many instances, and, in some, is absent entirely. (Two cases never suffered any pain whatever.) Severe pain sometimes causes nausea and vomiting (Case No. 15), and in a recent case of *migraine ophtalmique* following influenza, the symptoms—hemicrania, vomiting, prostration, concentric contraction of 10° to 25° of the visual field—were relieved by drainage of the sinuses.

A purulent nasal discharge—another symptom expected to be found in every case—is very frequently wanting in the sinus-ocular cases; it was exceptional in the cases herein reported. The failure to find this classical symptom has led only too often to an exclusion of sinusitis.

Congestion or engorgement of the turbinates, both middle and lower, is very suggestive of sinus disease.

An involvement of the external ocular muscles is a symptom by no means rare; it was present in nine cases—33 per cent.

Pain on pressing the globe backward was noticed while rubbing my own eye during a recent exacerbation—in fact, the globe was tender to pressure in any direction.

The three cardinal symptoms of closed sinusitis, then, are dizziness, pain, and nasal congestion.

The pathological anatomists report that sinus disease is very common, and the clinical cases referred to above show that it can give rise to an optic neuritis; theoretically, then, it should be a very frequent cause of an affection of the optic nerve. Three years ago the writer conceived the hypothesis that idiopathic ocular lesions were often but the symptom of an affection in the surrounding cavities, and in all cases of optic neuritis the nostrils were examined, and in the recent cases the sinuses were treated, even although in some instances there were no intranasal evidences of sinus disease present. The results were truly surprising, as in a series of 36 consecutive cases sinus disease was found to be present 26 times. The direct causal relationship was shown in 15 cases by improvement in the ocular condition following drainage, and, on *à priori* grounds, the 11 remaining cases were also attributed to the same cause, although the connection could not be demonstrated by any ocular improvement, as most of the cases presented more or less optic atrophy, while in others the treatment as advised was not carried out. It is conceded that some unknown ætiological factor, as, for instance, an intracranial lesion, may have been present in some of the cases in this second series, but we must remember that sinus disease can cause a bilateral optic neuritis, dizziness, pain, and vomiting—symptoms that have in several cases led to the diagnosis of tumor cerebri, and yet at the autopsy no tumour was found.

The proper examination of the sinuses in every case would greatly reduce in number the ætiological factors of optic neuritis. This pathogenesis of the cases due to "a cold" has already been referred to. According to Harke, Pearce, Wolff, and others, sinus empyema is found at the autopsy in the majority of the cases of measles and scarlet fever. In 13 influenza autopsies Weichselbaum found an empyema of one or more of the sinuses twelve times; in the one exception, the first case, the sinuses were not examined. In the 11 influenza cases herein reported, the optic neuritis was traced to sinus disease ten times; in the one exception with the initial coryza, anosmia, dizziness, and severe pain that induced vomiting, craniectomy was performed, but the sinuses were not properly examined, although the writer strongly urged it; the case terminated in bilateral amaurosis. In the writer's opinion, the more appropriate term for these various cases would be: optic neuritis due to sinus disease following influenza, scarlet fever, measles, etc., as the case may be. This hypothesis would explain the appearance of the ocular lesion, as a rule, during convalescence, or, in some cases, long after recovery.

Idiopathic facial erysipelas, with its very high percentage of blindness when the optic nerve is involved, is considered by the writer as but an evidence of a streptococcic or staphylococcic infection of the aural, buccal, or most frequently the nasal cavities underneath, and the reason why these cases so often terminate fatally as to both vision and life, is because two symptoms are held to bear the relationship of cause and effect, and the therapy is directed towards the relief of a symptom rather than of the real cause. The same is probably true in regard to the "cases of optic atrophy due to ozœna" or "to nasal polypi."

Syphilis is a frequent cause of sinus empyema. "There is nothing more frequent in tertiary syphilis than the nasal lesions," according to Fournier. We have, then, in syphilis, in addition to the tabetic optic neuritis, arising from degenerative changes in the central system, a second form, due to sinus disease. This type of optic neuritis, although its cause, sinusitis, is due to syphilis, cannot in reality be called "specific," and the treatment, in addition to the usual therapy, should be directed towards a drainage of the sinuses. In the cases reported by Schmiegelow and Pollascek, a specific maxillary and sphenoidal empyema, in spite of classical treatment, terminated in blindness—the second case in each eye.

Without questioning the possibility of a hereditary optic neuritis, it may be remarked, however, that the diagnosis is usually arrived at by exclusion and the sinuses are not examined. Hereditary tendencies, however, can hardly be accountable for 10 per cent. of the cases of retro-ocular neuritis, as has been claimed, and, furthermore, will the profession adopt Hanke's theory of a "dormant hereditary optic neuritis aroused by a cold"—a synonym of sinusitis? Each one of Hanke's patients suffered from pain in the head, dizziness, etc., following a cold.

I have heard the argument *in contra*, after mentioning this or that case cured by sinus treatment, "Yes, but we have all relieved different cases by the usual treatment, and most cases recover anyway." Attention is called once more to the fact that the majority of cases of sinusitis are self-limited, especially the acute cases arising from a cold in the head, and that even the exacerbations of the chronic form are followed by intervals of relief. There can be no doubt that many cases of optic neuritis terminate favourably owing to a drainage of the sinuses. Coppez and Lor's case is an instance—the neuritis recovered on spontaneous drainage of a sphenoiditis. In Bethune's case, each suppression of a purulent discharge from the frontal sinuses was accompanied by marked loss of vision, and on the reappearance of the nasal discharge, the sight invariably returned. In case No. 13 the vision began to improve before the patient was seen, owing to the sinuses discharging; and in a recent case of facial erysipelas with reduced vision the fever had disappeared and former vision returned after an

abundant discharge from the antrum that occurred a day or two before the writer saw the patient. The secretion in the middle meatus showed streptococci (Columbus Medical Laboratory). In case No. 4 the patient's vision had been failing for several months, and treatment by an ophthalmologist had been without result. Under strychnine, the vision in each eye soon improved to nearly normal, but a few days later it was again reduced to 1/20 in each eye. Treatment directed towards relief of the cause of the optic neuritis—ethmoidal empyema—restored normal vision, and there has been no recurrence to date, six months. Risley states that the vision in his case improved under potassium iodide, but its continual use did not prevent the gradual reduction in vision from 1/2 to 2/60, and the treatment of the real cause, as in the above case, restored the vision to 1/2. In case No. 25 the vision was reduced in each eye "following facial erysipelas" the condition terminating in normal vision in the right eye and total atrophy in the left. A somewhat similar case was reported last year by Soderlink. History of influenza with nearly total loss of vision in one eye, and rapid complete recovery without treatment. A few days later, the patient consulted Soderlink on account of reduced vision in the other eye, but, in spite of treatment, optic atrophy ensued. The reporter states, that "the abundant purulent nasal discharge probably came from the frontal sinuses," but, for some reason or other, sinusitis was excluded as a cause of the optic neuritis. In these two cases the evident explanation is that the bilateral empyema drained sufficiently on but one side only. In a case seen in consultation, the patient announced that he was "feeling much better," and incidentally called our attention to a yellowish secretion that he had been blowing from his nostril. What caused the complete recovery in this case of neuroretinitis, the usual treatment or the spontaneous nasal discharge?

Three of the observations herein reported are cases of glaucoma, two primary and one secondary. In each instance the affection of the sinuses was clearly present, and the causal relationship was shown by the improvement in the ocular condition following the drainage of the cavities. In the case of secondary glaucoma the vision improved from 1/15 to 1/2 and the patient was able to read the newspaper, the first time in four years. One of the primary cases showed improvement in both the vision and the visual field, but unfortunately this patient had a clear history of hæmophilia and the tight *tamponage*, necessary for days after the nasal operation, brought on fever, delirium, etc., owing to the damming up of infectious materials in the sinuses, hence the further surgical interference, necessary to cure completely the chronic empyema, was not undertaken, and when at last seen the patient was again using eserin. In the third case an acute attack appeared in an eye already nearly

Thirty-Six Consecutive Cases of Optic Neuritis: Nasal Accessory Sinus Disease Present Twenty-Six Times.

Cases showing Improvement of Ocular Condition following Treatment of The Nasal Sinuses.

Case	Eye	Lesion	Recent or Old	Sinus Treatment	Vision		Pain in Head	Dizziness	Involvement of Ocular Muscles	Etiology of Sinusitis	Diagnosis Elsewhere	Remarks
					Before	After						
1	O.D.	Ret.-oc.	Recent	Non-operative	Fingers	1·0	Severe	Present	Absent	Influenza	—	No reply received to recent inquiry as to the present condition. Last report gave the V. normal.
	O.S.	Ret.-oc.	Recent	Non-operative	Fingers	1·0	Relief	Relief	—	—	—	
2	O.D.	Ret.-oc.	Recent	Operated on	0·1	1·0	Absent	Present	Present	Cold	—	No recent report; last account good.
	O.S.	Ret.-oc.	Recent	Non-operative	0·1	1·0	—	Relief	Relief	—	—	
3	O.D.	Papillitis	—	Non-operative	1·0	1·0	Severe	Present	Had been present	Cold	—	Consulted different ophthalmologists during three years, who gave a grave prognosis. Complete relief; patient has been at work during past six months.
	O.S.	Papillitis	—	Operated on	1·0	1·0	Relief	Relief		—	—	
4	O.D.	Neur.-ret.	Recent	Operated on	0·05	1·0	Present	—	Absent	—	Albuminuric	Patient, now practising dentistry, reported June 13th, no trouble with his eyes since the operation in January.
	O.S.	Neur.-ret.	Recent	Non-operative	0·05	0·5	Relief	—	—	—	—	
7	O.D.	Secondary	—	Non-operative	0·7	0·5	Present	Present	Bilateral ptosis, spontan'ous cure	—	Luetic intra-cranial lesion	V. reduced for four months. Improvement in V. due in part to diminution of vitreous opacities. One year later "can read as good as ever."
	O.S.	Secondary	—	Non-operative	O	O	Relief	Relief		—		
10	O D.	Ret.-oc.	Recent	Operated on	O	Fingers	Present	Present	Present	Tumour posterior cells	Cerebral lesion	On determining a probable sarcoma of the ethmoid a further treatment was not advised.
	O.S.	Ret.-oc.	Part. op. at	None	O	O	—	—	—			
13	O.D.	Papillitis	Recent	Non-operative	Form	1·0	Present	Absent	Absent	Influenza	Tumor cerebri	Operation of sinuses advised but refused; recurrence; final V. = movements.
	O S.	Primary	Op. at.	None	O	O	—	—	—	—		

	O.S.	glaucoma, each eye	Op. at.	—	O	O	Relief	—	—	—	—	V. F. enlarged. Ocular condition satisfactory for weeks. Radical operation for chronic polysinusitis not advised on account of hæmophilia. When last seen the patient again instilling eserin.
15	O.D.	Secondary	—	Non-operative	Enucleat'n	—	Severe	—	Absent	—	Secondary	O. S. iridectomy four years before.
	O.S.	glaucoma, each eye	—	Non-operative	0·05	0·05	Improved	—	—	—	glaucoma	Improvement in V., reduced for four years, due in part to diminution of vitreous opacities. Partial atrophy of disc.
18	O.D.	Papillitis	Yrs. before	None	1·0	—	Present	Present	Present	Influenza	—	Chronic left empyema, subject to exacerbations with consequent visual disturbances. V. in June reduced to 0·15 owing to relative scotoma of upper half of field; relief following curettage of posterior ethmoidal cells.
	O.S.	Papillitis	—	Operated on	0·15	1·0	Relief	Relief	—	—	—	
19	O.D.	Normal	—	—	—	—	Absent	Present	Absent	Influenza	—	Absolutely normal nasal finding.
	O.S.	Hæm. neur. ret.	Recent	Non-operative	Movements	0·25	—	—	Absent	Influenza	—	Fundal changes resembled retinitis albuminurica.
20	O.D.	Papillitis	Recent	Non-operative	J. No. 4	1·0	Present	—	—	—	—	Patient dismissed the sixth day with
	O.S.	Normal	—	—	—	—	Relief	—	Absent	—	—	normal V.
22	O.D.	Normal	—	—	1·0	—	Severe	—	—	—	Glaucoma	Useful V. lost. Hemicrania, vomiting and T + 3 relieved by drainage
	O.S.	Primary glaucoma	Op. at.	Non-operative	Greatly reduced	—	Relief	—	—	—	—	of frontal empyema.
21	O.D.	Neur.-ret.	Old	None	Fingers	—	Present	Present	Absent	—	—	O.S. flashes of light and asthenopia
	O.S.	—	—	Operated on	1·0	1·0	Relief	—	—	—	—	relieved. Severe pain became strictly unilateral. Operation right side, postponed and not performed.
9	O.D.	Ret.-oc.	Old	Operated on	O	—	Present	Present	Present	—	Tumor	Total ptosis and muscular involve-
	O.S.	Ret.-oc.	Old	—	O	—	Relief	—	Improved	—	cerebri tabes alcohol-nicotine	ment greatly improved. Typical case of chronic empyema aside from the absence of nasal secretion. Consulted numerous specialists; nostrils never examined. Had been the subject of many clinical lectures.

CASES IN WHICH NASAL SINUS DISEASE WAS PRESENT.

CASES WITH KNOWN ETIOLOGY.

33 Bilateral amaurosis appearing at the menopause. Case 34 Bilateral amaurosis following removal of basilar tumour.
35 Bilateral amaurosis due to hydrocephalus internus Case 36 Bilateral neuro-retinitis albuminurica complicating pregnancy.

Case	Eye	Lesion	Recent or Old	Sinus Treatment	Vision		Pain in Head	Dizziness	Involvement of Ocular Muscles	Etiology of Sinusitis	Diagnosis Elsewhere	Remarks
					Before	After						
6	O.D.	Hæmor	Op. at.	None	Fingers	Cent. V.	—	—	—	Influenza	—	Peripheral V. better. Operation advised; refused.
	O.S.	neur.-ret.	Op. at.	—	Fingers	Cent V.	—	—	—	—	—	
5	O.D.	Hæmor	Op. at.	Non-operative	Movements	Movements	Severe	Present	Absent	Influenza	—	Operation advised; refused.
	O.S.	neur.-ret.	Op at.	Non-operative	—	—	Improved	Improved	—	—		
12	O.D.	Papillitis	Op. at.	None	L.P.	—	Severe	Present	Present	Influenza	Tumour cerebri, syph.	Syphilis denied. Consulted many specialists. Nostrils never examined.
	O.S.	Papillitis	Op. at.	Non-operative	O	—	—	—	—	—		
8	O.D.	Ret. oc.	Recent	Non-operative	0·75	—	Severe	Present	—	Cold	—	Marked relief from pain and vertigo. Operation advised; refused.
	O.S.	Hæmor-neur.-ret.	Op. at.	Non-operative	Fingers	—	Improved	Relief	—	—	—	
23	O.D.	Normal	—	—	—	—	—	—	—	Cold	Contrecoup	Left nostril nearly occluded by congestion and purulent secretion.
	O.S.	Ret.-oc.	Recent	None	Reduced	Reduced	Absent	Present	—	—		
24	O.S.	Neur.-ret.	Old	None	"Blind"	—	—	—	—	—	Albuminuria	Operation advised; refused.
16	O.D.	Ret.-oc.	Old	None	0·4	—	Present	Present	Absent	—	—	—
	O.S.	Ret.-oc.	Old	—	0·4	—	—	—	—	—	—	—
25	O.D.	Normal	—	None	1·0	—	Had been	—	—	—	Erysipelas	V.O.D., which had been reduced, probably restored through spontaneous drainage of cells on that side.
	O.S.	Primary	Op. at.	—	O	—	present	—	—	—	—	

17	O.D. O.S.	Ret.-oc. Ret.-oc.	Part. op. at. —	None Operated on	0·07 0·4	— 0·5	Present —	Present —	Present —	Syphilis —	Syphilis —	After amputation of part of mid-concha polypi were removed. Increased vertigo attributed "to operation." Second operation refused.
11	O.D. O.S.	Hæmor. neur.-ret.	Op. at. Op. at.	Operated on Non-operative	L.P. L.P.	— —	Severe —	Present —	Present Spon. cure	Tumour post. cells	Intracranial lesion	——
26	O.D. O.S.	Normal Ret.-oc.	— Part. op. at.	— —	— 0·5	— —	Present Relief	Present Relief	Absent —	Influenza —	— —	Operation advised but postponed. Patient writes, July 8th, "Pain relieved."

CASES WITH UNKNOWN ETIOLOGY.

				Nasal exam.								
27	O.D. O.S.	Primary Primary	Op. at. Op. at.	Negative Negative	L.P. L.P.	— —	Had been severe	Present —	Present Early	— —	Tumor cerebri	Spontaneous cure of muscular involvement. Attacks of severe pains months apart, with intervals of complete relief.
28	O.D. O.S.	Primary Primary	Op. at. Op. at.	Negative Negative	O O	— —	Present —	Present —	Absent —	— —	— —	Superior cervical ganglia removed in 1903.
29	O.D. O.S.	Primary Primary	Op. at. Op. at.	Negative Negative	O O	— —	Present —	— —	— —	— —	— —	Patient seen but once.
30	O.D. O.S.	Primary Normal	Part. op. at. —	Congestion —	0·7 1	— —	Present —	— —	Absent —	— —	Later diagnosed as "glaucoma"	Recent cold followed by pain, lid œdema, and op. neur. Sinuses inaccessible; operation refused.
31	O.D. O.S.	Hæmor. neur.-ret.	Recent Recent	? —	O O	— —	Present —	Present —	— —	Followed Influenza	Syphilis cerebral lesion	Sphenoidal cells had been opened; craniectomy negative. Writer advised treatment of eth. cells; Refused. Final V.=o each eye.
32	O.D. O.S.	Hæmor. neur.-ret.	Recent Recent	Congestion (Year later)	Reduced in one eye	Normal Normal	Severe —	Present —	Present —	— —	Abscess or tumor cerebri	Craniectomy advised unless condition improved within few days. Complete recovery under KI.

blind from chronic glaucoma. The increased intraocular tension yielded to the drainage of the frontal empyema under two different conditions: first, before the use of a myotic, and, second, after the instillation of eserin, the patient having refused the surgical treatment of the frontal sinus, as advised.

de Lapersonne, Paquet, and Germann have reported glaucoma due to maxillary empyema, and the well-known case of Lennox Browne was also probably a chronic empyema. Each one of these three cases showed improvement, and each one had failed to yield to an iridectomy. Ayres reported the cure of a case of glaucoma by the removal of nasal polypi. In a recent personal communication, de Lapersonne mentions another case of primary glaucoma, due to maxillary empyema. That glaucoma can result from trigeminal irritation is shown by the fact that a diseased tooth will cause it; as witness the well-known case by Redard, in which the extraction of a tooth relieved the glaucoma, after failure of operative treatment. Desbrieres reported increased intraocular tension in two sinus cases. A cold in the head is an admitted ætiological factor; Wagner says of his own case, the attacks of glaucoma were less frequent when he was free from colds and the consequent congestion in the head. In a fourth personal case, diagnosed as glaucoma by several ophthalmologists, a severe cold in the head was followed by severe frontal pains, rapid loss of vision. secondary cataract, etc., in each eye. Nasal examination, made a few weeks later, showed positive evidence of a bilateral sinus disease.

The many varied types of sinus disease are strikingly similar to the different forms under which glaucoma appears—from the acute attack, with œdema of the surrounding parts, to the slow chronic form, with its occasional exacerbations during a period of years. This hypothesis accounts for the bilateral appearance of glaucoma in the majority of instances; its greater frequency during the inclement weather of the winter and spring seasons; the variation in the intraocular tension during the 24 hours; the instances in which pain long precedes the appearance of the increased tension, as well as the persistence of this pain in some cases even after enucleation—case No. 15 furnishing an example. It may be argued that the performance of an iridectomy, which so often relieves glaucoma, can have no possible effect on a disease of the sinuses. But, remember that it is in the acute cases that an iridectomy relieves and in the majority of the chronic cases it fails. This very hypothesis affords an explanation for this marked difference in the results of the operative treatment, for, assuming that sinus disease is a common cause of glaucoma, as the acute cases of sinusitis are in the majority of instances self-limited, the iridectomy relieves the increased tension and so saves the eye from threatened destruction, and the sinus affection gradually heals spontaneously; the iridectomy has carried the eye over the dangerous period.

But in chronic sinus disease, with its ever-recurrent exacerbations iridectomy often fails in its mission, and the eye goes on to gradual loss of function. Case No. 15 again affords an illustration, as, at the time of the initial attack, an iridectomy relieved the increased tension and so preserved the globe and a portion of the vision. It will be admitted that the usual treatment of glaucoma is directed solely towards the relief of a symptom—the increased tension. If a cause of glaucoma can be determined, we may reasonably hope for better results. Before leaving this subject I cannot but refer to the case of that eminent ophthalmologist the late Dr. Javal, who in describing his own case refers to recurrent glaucomatous attacks accompanied by œdematous condition of the corresponding nostril, a congestion sufficiently marked to be even subjectively perceptible. This is a symptom of sinus disease, and, after seeing time and again a nasal congestion subside on treatment of the sinuses, I cannot but think that our unfortunate *confrère* would not have been blind had the treatment been directed towards the drainage of the nasal sinuses in place of the repeated operations on the eye, all of which, as we know, were in vain.

In conclusion, I wish to emphasize one thing, namely, that an absolutely negative nasal finding does not exclude accessory sinus disease, and to state, further, that after a careful consideration of this subject, I am convinced that sinus disease is one of the most frequent causes of optic neuritis, and that the proper treatment of the sinuses would prevent the unfavourable termination that now occurs only too often.

MALIGNANT DISEASE OF THE ACCESSORY SINUSES:

Notes of Three Cases.

BY

SYDNEY STEPHENSON,

LONDON, ENGLAND.

Malignant diseases of the accessory cavities of the nose—that is to say, of the antrum of Highmore, the frontal sinus, the sphenoidal sinus, or the ethmoidal labyrinth—are exceedingly uncommon in any department of medicine or surgery. This must be my excuse for recording the following three cases, of which two were seen in hospital and one in private work. It is significant, as pointing to the nature of the prominent symptoms in such cases, that all fell under the notice of an ophthalmic surgeon. The facts, which are by no means so complete as one could wish, are as follows:—

Case No. 1.—*Malignant growth from the (?) ethmoid-sphenoid in a child of 10 years: early blindness: moderate proptosis: extension to glands of neck: death from exhaustion.*

May P——, 10 years, was brought on September 25th, 1902, with the history that so-called "adenoids" had been removed two months previously, and that about a fortnight after the operation, she began to complain of pain in the head, severe enough to prevent her from getting much sleep of nights. Next, the child lost the sight of her left eye—it is said, in the course of a single week, the vision fading from the centre. The left eye was then noticed to be somewhat prominent. The **family history** was unimportant. The parents had been married for 11 years and the patient was the only offspring. There had been no miscarriages. There was stated to be no phthisis pulmonalis on either side of the family.

On examination.—A poor, wretched-looking, and intensely nervous child, perpetually "grizzling," and weighing three stones. Fine growth of downy hair on face, etc. The left eye, which was unable to tell light from dark, was pushed forwards and a little outwards, and its movements were restricted in all directions. The proptosis was moderate in degree. No growth could be felt in the orbit. The pupil, the transverse diameter of which was 7 mm., was motionless, even when exposed to a bright electric light. The fundus oculi showed nothing whatever to

FIG. 1.

account for the complete blindness. Hypermetropia, 2 D. As regards the right eye, sight was normal; the pupil measured 5 mm. and was responsive to light; the fundus was normal; and there were 2 D. of hypermetropia. The cervical glands of the left side were markedly enlarged. There was discharge from the left ear. The left nostril and both posterior choanæ were more or less blocked by what appeared to be new growth.

Course and termination.—The child was not seen again until August 2nd, 1903—*i.e.*, 10¼ months after the above notes were made. Her condition had altered very much for the worse. I found her in bed, much emaciated, and desperately ill. She complained of pain in her left arm, which was œdematous, and in her back, the latter being accounted for by a sacral bedsore, which was present. Both legs were dropsical. She was deaf as regards her left ear. Speech was altered and indistinct; the hard palate was ulcerated. The child lay with open mouth and her teeth protruded. As shown by Fig. 1, a fleshy-looking mass, about the size of a walnut, capped with a thick, wrinkled, grey scab, protruded from the left orbit, and could not be covered by the eyelids. The orbit itself was filled with a hard growth. A solid, resistant, potato-like lump, equal in size to a small cocoa-nut, ulcerated on its hinder aspect, occupied the left side of the neck. A smaller mass, having similar physical characters, was present on the right side of the neck. The left side of the face and forehead, as shown by the figure, was covered with numerous downy black hairs, and to a less extent the other side of the face showed a similar crop. The child, whose condition was piteous in the extreme, died quietly three days after I saw her. The parents would not allow me even to remove a piece of the growth from the neck after death for purposes of microscopical examination, to say nothing of performing an autopsy.

Case No. 2.—*Endothelioma of ethmoidal-sphenoidal sinus in a boy of 13 years; proptosis, pain, and defective sight: Krönlein's operation: recurrence: blindness of the second eye: death.*

Frederick S———, 13 years, was brought on January 11th, 1901, to the ophthalmic department of the Evelina Hospital, London, on account of a prominence of the left eye, of about three weeks' duration. The lad complained also of occasional pain around the left orbit. According to the history given, the patient had knocked his left brow with some violence against another boy's head in May, 1900. **On examination.**—Left eye slightly prominent, and its lateral movements not quite so free as those of the other eye. No thrill, pulsation, or murmur over the proptosed eye. Proptosis not increased on stooping. No orbital growth could be felt. Sight (each eye)=5/5 and No. 1 Jaeger. Both optic discs of good colour; no fundus changes. The boy was white, thin, and nervous. No enlargement of the thyroid gland; pulse 76 per minute; Graefe's sign not present. **Course.**—*January 25th*, 1901.—Proptosis of left eye more pronounced, but no thrill, pulsation, or murmur can be felt or heard. Slight limitation of movement, especially upwards. R. and L. V.=5/5 and No. 1 Jaeger. Field of vision for white of full extent in both eyes. The left optic disc, however, shows slight neuritic changes (*plus* 1. 5 D. sph.). No tremor; pulse 52 per minute. *February 15th*, 1901.—The lad has lost flesh lately. He complains of occipital headache, not violent, but lasting all day, and of pain in the back. There is a little vomiting now and then. The sight of the left eye has gone down to the counting of fingers at 33 cm. from his face, owing to the development of a large central scotoma. There is now marked optic neuritis of the left eye, as shown by dilated retinal veins and badly-defined disc, but there is not more than 2 D. of swelling, and there are no hæmorrhages. The left eye is thrust markedly forwards and somewhat outwards—that is, the deviation lies in the axis of the orbit. Its movements are restricted, but not markedly so. The direct action of the pupil to light was almost abrogated, but the indirect action was retained. The caruncle of the left eye was red and swollen, so as to occlude the inferior punctum lacrymale by direct pressure, thus accounting for the patient's statement that the eye watered a good deal. On palpation of the orbit, it was thought that a sense of increased resistance to the examining finger could be made out deep in the upper-inner angle. The diagnosis was evidently obscure, but it was surmised that the underlying condition might possibly be one of a growth involving the sheath of the optic nerve. The patient was admitted to hospital with a view to operation.

For the next few days the pulse ranged from 44 to 68 per minute, and the temperature did not exceed 99·4° F. The bowels acted only in response to glycerine injections or to the administration of castor oil. On *February 18th* it was noted that the patient had lost what little sight in the left eye he had possessed on his admission three days previously. On *February 19th* the following note was made: "Bowels confined. Giddiness on getting out of bed. Left eyeball more prominent, and not covered completely by the lids. The lower margin of the cornea has ulcerated. A hardish mass can be felt at the upper and inner angle of the orbit. The pupil is of medium size, and scarcely reacts to light, although its indirect action is good. There is marked optic neuritis, with distension of retinal veins, but no hæmorrhages. The summit of the disc can be seen with *plus* 1·5 D. sph."

Operation (*February 22nd*, 1901).—Under chloroform, with the help of my surgical colleague, Mr. A. H. Tubby, a rectangular flap was made, beginning over the frontal bone, one inch or so behind the external angular process, passing along the outer edge of the orbit, and terminating near the junction of the zygomatic process with the malar bone. The flap was turned back, and the periosteum of the orbit raised with a raspatory, so as to expose the spheno-maxillary fissure. The root of the ascending process of the malar bone was next sawn through in a horizontal direction, and with a sharp chisel this was continued into the anterior extremity of the spheno-maxillary fissure. The external angular process of the frontal bone was next sawn through obliquely about a quarter of an inch above the articulation between the frontal and the malar bone, and with a chisel the incision was continued to the spheno-maxillary fissure. The wedge-shaped piece of bone thus outlined was twisted outwards with strong forceps. The periosteum of the orbit was opened by a longitudinal incision, so as to expose granular fat and the external rectus muscle. The stretched optic nerve was defined with the finger, and in that way a hard mass was felt to lie upon the mesial side of the nerve and to be firmly attached

to the wall of the orbit. Under these circumstances, the only course open appeared to be to clear out the entire contents of the orbit, a dreadful expedient which was carried out as follows.—A horizontal incision was made from the outer canthus of the eyelids to the centre of the original incision, where the latter lay upon the outer part of the orbit. The upper and the lower eyelid were separated with scissors from the other orbital tissues, and the periosteum was raised with a raspatory from the bony walls of the orbit. In this way the periosteum was freed from its attachments everywhere except at the sphenoidal fissure and the optic foramen. The last step consisted in dividing with scissors these attachments, including, of course, the optic nerve and the ophthalmic artery. The orbit was irrigated and the piece of resected bone replaced, and the skin-flaps were brought together by numerous sutures, and the orbit was plugged with strips of cyanide gauze. There was considerable oozing of blood during the operation, and many vessels had to be tied in the skin-flaps.

The tumour, when examined immediately after removal, formed a somewhat kidney-shaped mass, roughened on its mesial (inner) aspect by small osseous deposits. It was more or less encapsuled. There were several small outlying deposits. The measurements of the main tumour were : 35 mm. by 25 mm. The mass pressed upon the inner side of the optic nerve, without apparently invading that structure. It appeared to be an extension from the interior of the ethmoid bone through the os planum, in which a perforation, filled with tumour material, could be felt by the finger introduced into the orbit. On section, the mass of the tumour was found to be firm, free from obvious hæmorrhage, and of a greyish-white colour. **Microscopic examination.**—The neoplasm presented the structure of an endothelioma—that is to say, it was made up of large round or oval cells, recalling those of endothelium, embedded in clusters in the meshes of a fibrous matrix. Here and there clefts lined with similar cells were to be seen. The appearances are shown in Figs. 1 and 2 on the plate. Sections of the optic nerve behind the eyeball showed a moderate degree of interstitial neuritis, without perineuritis. It will be apparent from Fig. 3 on the plate, which represents a meridional section through the eyeball, that the papilla was œdematous.

Progress.—From the hospital notes of the case it appears that the night before operation the lad complained of dimness of the sight in his right eye, and that the evening after operation "the sight in the eye was very slight," also according to the same source. The patient complained of pain in the jaw and left side of the face. Temperature 97·2°F. and 99·8°F. Pulse 72. Respirations 22. *February 23rd.*—Considerable oozing of blood from the left nostril, which was blocked up. Under a general anæsthetic, the gauze plugs were removed from the orbit. Temperature 98·4°F. and 99·8°F. Pulse 88 and 96. Respirations 28. *February 24th.*—Wound dressed. Skin around field of operation hyperæsthetic, and tissues rather swollen, but no reaction beyond that. Temperature 98°F. and 99·4°F. Pulse 120 and 106. Respirations 24. There is now very serious failure of sight as regards the right eye, with which fingers held near the face can be counted only with difficulty. The centre of the field of vision appears to be most affected. Pupil reacts to light sluggishly. The optic disc is in a state of early neuritis. No proptosis : movements of eyeball good in all directions. *February 25th.*—Under the influence of a general anæsthetic, plugs removed from orbit and some stitches taken out. Temperature 99·2°F. and 99°F. Pulse 88 and 80. Respirations 26. *February 27th.*—All sutures removed. Drainage tube placed in orbital cavity. Temperature 99°F. and 98·4°F. Pulse 76, irregular. R.E.—Pupil dilated and almost motionless to light. V.=perception of light. Slight haziness of upper and lower margin of optic disc, but no definite neuritis. No proptosis or loss of movement or tumour to be felt in orbit. Flaps healed. Much fœtid discharge from orbit. Left nostril blocked, and a small mass to be felt in the left choana. *March 6th.*—Temperature 97·6°F. and 99·2°F. Pulse 70 and 66. *March 15th.*—R.E. V.=no perception of light. Pupil dilated and motionless to light. The existence of slight papillitis is shown by haziness of edges of disc, distended retinal veins, and narrowed retinal arteries. There may be a little proptosis, while movements are certainly limited, especially outwards. No tumour can be felt in the orbit. Lad unable to blow down left nostril. Growth felt a fortnight ago in left choana cannot be made out to-day. Operation wound healed. Orbit difficult to inspect. Its upper and inner part, however, is a little swollen, and on palpation there seems to be a nodule of new growth in that position. Temperature 98·6 F. and 97·4 F. Pulse 68 and 61. General condition of patient tolerable. *March 20th.*—The lad gets drowsier day by day, although he still takes his food well. The orbit continues to discharge fœtid pus. There is now considerable swelling of and

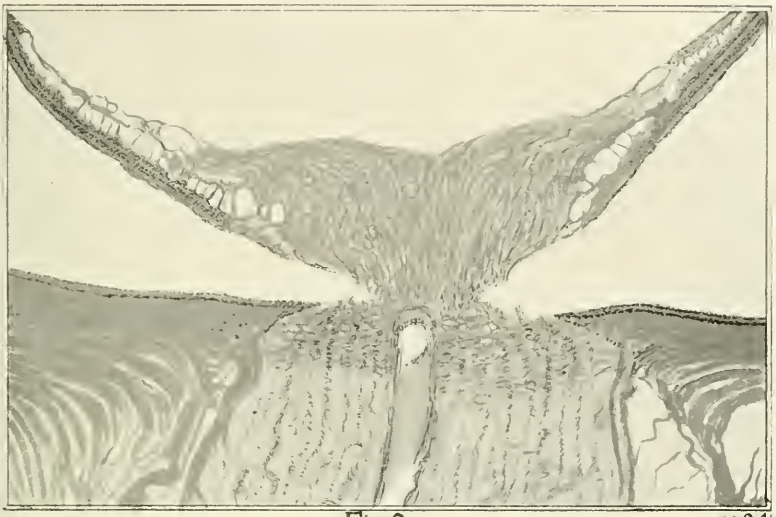

Fig. 3 ×24

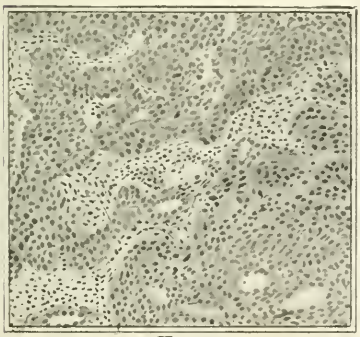

Fig. 4 ×80

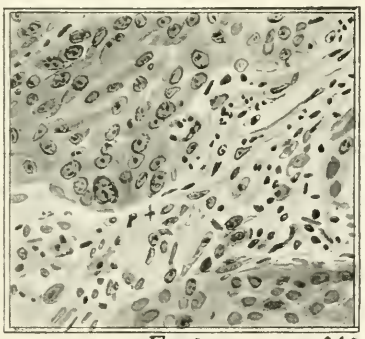

Fig. 5 ×240

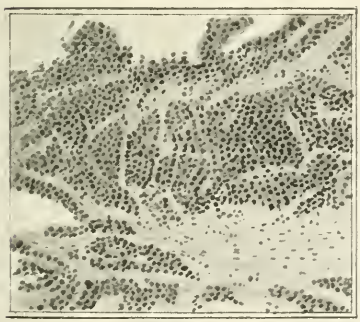

Fig. 1 ×80

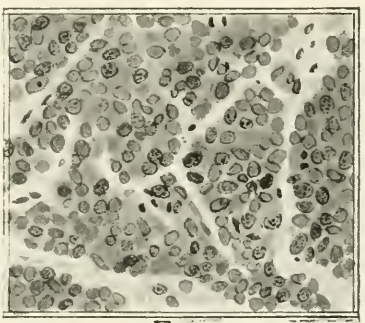

Fig. 2 ×240

MALIGNANT DISEASE OF THE ACCESSORY SINUSES.

SYDNEY STEPHENSON.

See page 256.

tenderness over the site of the skin-flap, but no local redness. The swelling, which is increasing rapidly, probably represents a local recurrence. Temperature 97·8°F. and 97·4°F. Pulse 58 and 64. *March 22nd.*—Patient removed by his parents on this date, after a stay in hospital of 66 days. It is to be noted that the temperature never rose above 99·8°F. after the Krönlein resection had been performed, and that the skin flaps healed by first intention.

For the completion of the case I am indebted to the kindness of Dr. Herbert Carstairs, who attended the patient at his parent's home at Ewell, Surrey, after the lad had left the hospital. The right eye became so prominent that sloughing was apprehended by Dr. Carstairs. The left orbit became occupied by a fungating mass, which furnished a semi-purulent discharge, and the skin for about 1½ inches around the orbit was bluish-purple and intensely œdematous. The condition of the patient on *April 30th—i.e.*, 39 days after he left the hospital—is shown in the accompanying diagram (Fig. 2). A fungating mass grew from the left orbit and was surrounded by

FIG. 2.

bluish-purple œdematous skin. The right eye, quite blind, was proptosed, and the lower lid was œdematous. The boy had been reduced to mere skin and bone, and unless kept constantly under the influence of opiates, suffered much pain, chiefly in the head.

Termination.—The patient died on June 24th, 1901—that is 122 days after operation, and 94 days after he left the hospital. To my great regret, the parents resolutely refused to allow the body to be examined after death.

Case No. 3.—*Epithelioma of the antrum of Highmore in a man of 66 years.*

William L——, 66 years, was seen by me at the Kensington General Hospital on September 10th, 1906. **History.**—Two months ago an "abscess" appeared near the inner corner of the right eye, and the condition is said to have got steadily worse since then. No history of injury. The patient, who has lost flesh lately, has suffered

much pain in the right side of his head. **Present state.**—The right eye stands half an inch higher than its fellow. The region of the right superior maxilla is tender and obviously swollen. An elastic swelling present on inner wall of the orbit, above the tendo oculi. It conveys the impression to the finger that it is connected either with the frontal or the ethmoidal sinus. Right nostril blocked. Nothing can be felt in the choanæ. Teeth in right upper jaw mostly missing. **Course.**—*October 13th*, 1906.—A solid swelling is now present over the inner part of floor of the orbit, lying below the elastic swelling mentioned above. Mr. William Lloyd, rhinologist to the hospital, removed a fragment of growth from the antrum through the right nostril. This was handed to me for examination, and found (see Figs. 4 and 5 on plate) to be an epithelioma. It will be observed from the figures that the component cells of the growth are of epithelioid appearance, arranged in groups, which are separated from one another by intervening tracts of more or less vascular connective tissue containing numerous small cells, the so-called "cancer stroma." Cancroid globules are present here and there.

Remarks.—The cases described in the foregoing pages go to show how frequently the outstanding symptoms of sinus mischief are of an ocular character, with the consequence that help, at all events, in the first instance, is sought from the ophthalmic surgeon rather than from the rhinologist. The recognition of this fact makes it most desirable that every ophthalmologist should possess at least a fair working knowledge of the accessory sinuses and of the diseases to which those cavities are subject. Even so, the early diagnosis of such cases must often be purely conjectural. In my first case, it is true, a provisional diagnosis was made, when I first saw the patient, of sphenoidal malignant disease on account of: (1) the blocking of the left nostril and the posterior choana by what seemed to be a new growth; (2) the complete blindness without ophthalmoscopic signs; (3) the proptosis and restricted movements of the affected eye; and (3) the pain and emaciation. In the absence of (1) even this provisional diagnosis, however, could scarcely have been come to. Besides, even now the exact nature of the case is open to doubt, since no *post-mortem* examination could be obtained. Again, take my second case where the symptoms appeared to point in the direction of a tumour involving the optic nerve. The points that seemed to favour this supposition were two in number: (1) the early onset of neuritis and blindness; and (2) the deviation of the eyeball in the axis of the orbit. Yet on exploration of the orbit the growth was found to originate from the ethmoid-sphenoid sinus. At the same time, had I been made acquainted with the fact (as I ought to have been) that the sight of the other eye had commenced to fail the night before operation, I should certainly have been compelled to revise my diagnosis, although not to alter my procedure. The central failure of sight noted after operation was, of course, a most important diagnostic point. For as Birch-Hirschfeld and others have shown, in affections of the optic nerve, due to diseases of the posterior sinuses of the nose, a central scotoma is the first evidence of failure of vision. Indeed, it is said to be constant in such cases.

It is to be observed that two of my cases were in children,

which emphasises the fact that malignant disease of some of the accessory sinuses, as the sphenoid and the ethmoid, is apt to occur in that class, a point that is sometimes rather apt to be overlooked.

With regard to the nature of the growths, it has already been stated that case No. 2 was an instance of endothelioma. What was the character of that present in Case No, 1 must remain a matter for conjecture, since no autopsy was permitted. It may, however, be assumed with some probability, having regard to the clinical course run by the disease, that it also was an endothelioma. As to Case No. 2, sections of the neoplasm removed from the orbit were examined by Dr. David Nabarro, then pathologist to the Evelina Hospital, and reported as being in the nature of a somewhat peculiar fibro-sarcoma. My own examinations, however, had led me to form the definite opinion that one was dealing with a growth that resembled an endothelioma more closely than anything else I had ever seen. Under these circumstances, Dr. Nabarro was kind enough to re-open the inquiry, and to submit specimens to Dr. Sidney Martin, F.R.S., who agreed that the growth was probably an endothelioma, although not of an absolutely typical kind. The specimens (Figs. 1 and 2 on plate) will speak for themselves to those who are competent (which I am not) to express a definite opinion upon so technical a point.

THE APPLIED TOPOGRAPHICAL ANATOMY OF THE SINUSES ACCESSORY TO THE NASAL CAVITIES IN THEIR RELATIONS TO THE ORBIT AND TO ITS MORE IMPORTANT CONTENTS.

BY

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Orbital and ocular lesions, like all other morbid conditions, may have their origin in neighbouring or contiguous anatomical structures by:—(a) direct infiltration or permeation of tissues; (b) extension along lymphatics, *e.g.*, perivascular, peri- or endoneural lymphatic channels; and (c) thrombophlebitis.

There is no speciality of surgery which requires a more thorough and intimate knowledge of the structure and relations of its component parts and its accessory cavities than rhinology. The multiplicity, complexity, and variability of the accessory nasal sinuses which has justified this speciality are of no little importance to the dentist, the neurologist, and the ophthalmologist. Owing to the vast multitude of etiological factors productive of the various signs and symptoms which evidence a lesion of the visual apparatus, I will confine myself to definite anatomical points, connected with the orbital walls, the surrounding spaces and channels, which are of paramount importance in the practice of surgery.

The ophthalmologist finds the eyeball and accessories surrounded posteriorly, internally, superiorly, and inferiorly by the delicate bony (often only membranous) boundaries of the many sinuses, and a further very close inter-relation of of sutures, fissures, and foramina which transmit nerves, blood vessels, and lymphatics.

The olfactory apparatus comprises :—

1. The nasal fossæ.
2. The cavities connected with the nasal fossæ termed "accessory sinuses." It would be idle to say that a comprehensive description of such varying labyrinthine spaces can be given here.

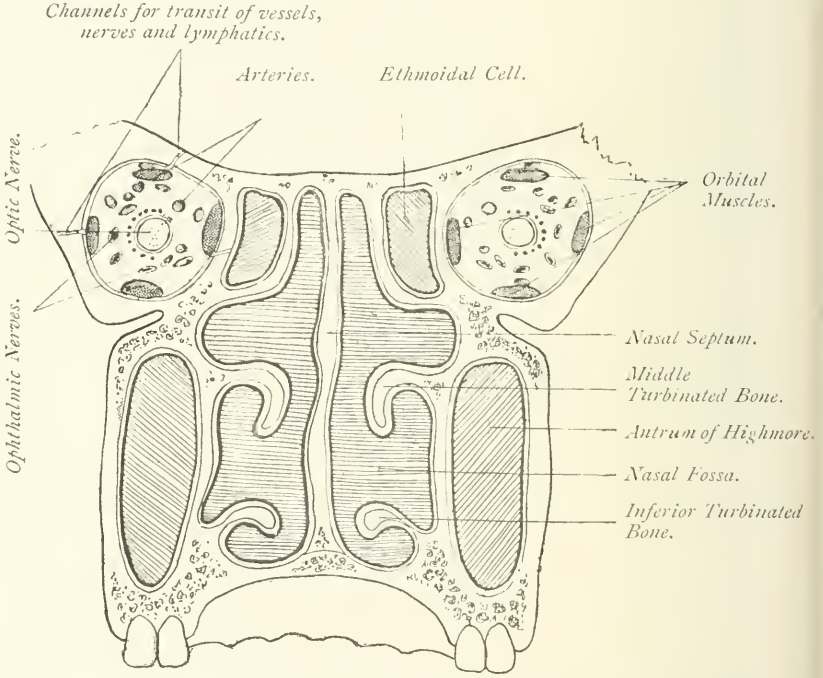

FIG. 1. — Diagram of a frontal section through orbit (posterior to the eyeball) and nasal cavities, ethmoidal, and maxillary sinuses.

Many clinical and anatomical works of recent publication have succeeded in putting before the medical profession the great importance of these cavities, which comprise :—

1. The maxillary sinus—antrum of Highmore.
2. The frontal sinus.
3. The ethmoidal sinuses—(a) Anterior group.
   (b) Posterior group.
   (c) Intermediate group.
4. The sphenoidal sinus.

A careful study of comparative anatomy and embryology has taught us how these paired sinuses are mere diverticula from the nasal cavities, whereas clinical pathology tells us that the pathogeny of diseases of these sinuses is at one with those of the nasal cavities. Unfortunately, the communications of these cavities with the nose are narrowed straits, whereby micro-organisms gain regions secluded from the antiseptic action of the normal secretions, and where local antiseptics fail to reach, so that repeated attacks of nasal catarrh are the invariable clinical antecedents of a sinusitis.

The Maxillary Sinus or Antrum of Highmore.

This sinus, situated in the middle of the superior maxilla, is generally a single cavity, of an irregular pyramidal shape, varying in size according to age, sex, etc.

This sinus exists at birth, but attains its full size only with the development of the teeth. In old age absorptive processes may cause considerable extension into the malar and nasal regions.

The boundaries of this cavity are :

Internally	Nasal surface of superior maxilla.
	Inferior turbinated bone.
	Uncinate process of ethmoid bone.
	Vertical plate of palate bone.
	Lacrymal bone.
Superiorly	Orbital plate of the superior maxilla
Inferiorly	Alveolar process of ,, ,,
Antero-externally	Facial aspect of ,, ,,
Posteriorly	Zygomatic surface of ,, ,,

Normally, light traverses this sinus when suitably arranged, but in the presence of empyæma and other conditions "trans-illumination of the sinus" (Heryng) is altered.

The orifice of the antrum (small, rounded, or oval, and not always single) is so situated in the lower part of the hiatus semilunaris and the middle meatus of the nose that drainage is defective, consequently extension from the nose to the antrum of a catarrhal or septic rhinitis may lead, by occlusion of the orifice and consequent retention of mucus with formation of pus, to mucocele or empyæma.

This is frequently accompanied by pain in the orbit, slight fulness of the lower eyelid, and lacrymation.

Free suppuration, which necessarily causes a purulent nasal discharge, is most frequently seen by the rhinologist. When the orifice of the sinus is occluded, unless the patient is already under the care of the rhinologist, a surgeon frequently gets control: rarely, owing to circumorbital pain and lacrymation, with extension of the infective process along the infra-orbital nerve or nasal duct, the ophthalmologist may be consulted. But in the commonest variety, associated with alveolar caries, the dentist's skill is called for. Such a clinical subdivision teaches us a lesson, "Specialism may be over-specialized."

When tumours of antral origin extend in their growth, they encroach upon the orbital and nasal fossæ, lacrymal duct, pterygomaxillary region, mouth, and cheek.

The Frontal Sinus.

The frontal sinuses, of extreme variability in size and shape, are situated between the inner and outer tables of the frontal bones on either side of the middle line. They originate as extensions of the anterior ethmoidal cells about the seventh year. The thinnest portion of the external wall of these sinuses is at the inner and upper angle of the orbit, where a collection of pus in the frontal sinus occasionally bursts externally. Unequal in size, with many subcompartments and of varying associations with the ethmoidal cells, whence they derive their origin, the frontal sinuses open into the middle nasal meatuses through the infundibulum.

Orbital abscess makes its appearance usually :—

(a) below and on outer side (antral origin),

(b) above and on inner side (frontal origin),

as a soft, red, œdematous, and fluctuating focus associated with a varying degree of ocular deviation and projection.

An early incision is most desirable. This can be carried out by inserting a straight knife into the swelling and carrying it well backwards, almost the whole length of the orbit.

In frontal sinusitis, with the abscess at the upper and inner aspect of the orbit, an incision should be carried longitudinally or slightly curved downwards along the inner $\frac{1}{3}$rd of the eyebrow through skin, muscles, and pericranium ; an endeavour should be made clearly to define the edge of the orbit and the bulging of the sinus. At this point, by a trephine, gouge, or chisel, a round hole should be made. If the cavity is large, and the pathological process extensive, an endeavour should be made to pass a drain through the lower opening of the sinus *via* the infundibulum into the nose, and drainage be carried on *via* both passages. This operation is frequently attended by considerable injury to the delicate lacrymal and ethmoid bones.

The Ethmoidal Sinuses.

The ethmoidal cells, which together constitute the ethmoidal labyrinth—situated in the lateral masses of the ethmoid bone—are in apposition with the frontal sinus above, the sphenoidal sinus behind, and the maxillary sinus below, and form two independent groups (despite their irregular arrangement).

1. The anterior ethmoidal cells—opening into a sinuous canal, the infundibulum, which leads from the frontal sinus to the middle meatus of the nose—correspond to the anterior half of the inner wall of the orbit.

2. The posterior ethmoidal cells—opening into the superior meatus of the nose—correspond to the posterior half of the inner wall of the orbit.

The thin, smooth, oblong, outer wall of the lateral mass, called the "os planum," forms most of the inner wall of the orbit, where sutures connected with the nasal, frontal, lacrymal, superior maxilla, palate, and sphenoid are seen; at two definite points of this sutural tessellation are seen orifices—anterior and posterior ethmoidal foramina, traversed by vessels, nerves, and lymphatics.

Abnormal positions of ethmoidal cells were first described by Berger and Tyrmann, Zuckerkandl, and Douglas.

Onodi, in his extensive studies, has found 38 different types of ethmoidal cells. Before enumerating the various groups

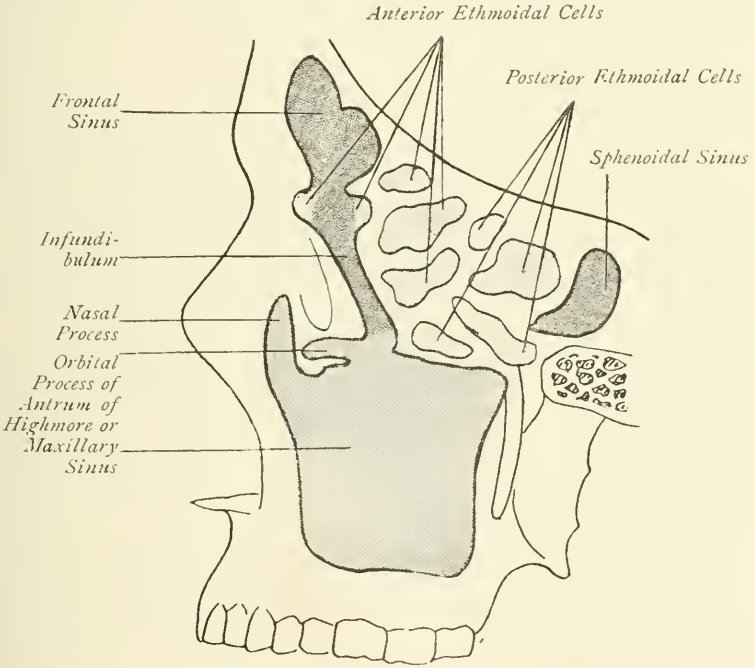

FIG. 2.—Cavities accessory to the nasal fossæ (after Sieur, Jacob, and Onodi).

into which Onodi has classified such types, we may here remark on the extreme thinness of the lamina papyracea (so-termed) which separates the ethmoidal cells from the orbital contents. The frequent occurrence of defects in this bony lamina when the orbit is only separated from the ethmoidal cells and indirectly from the nasal cavity—that harbour for microbes—by a thin fibrous membrane, is noteworthy. We may further add that when the wall of the optic canal is formed by the posterior ethmoidal cells the same inadequate partition may exist.

Onodi describes six groups:—

Group 1.—Posterior ethmoidal cells and the sphenoidal sinus bear no close relation (8-12 mm.) to the optic system.

Group 2.—Three types :—

(a) Posterior ethmoidal cells are in a medio-inferior relation to the optic nerve, and form the inner and lower wall of the optic canal.

(b) Asymmetrical modification.

(c) Enormous cavity on the left side—frontal and ethmoidal sinuses practically confluent.

Group 3.—Asymmetry: Posterior ethmoidal cells of one side extend over to the opposite side—the cells here being small—and practically occupy the position of the sphenoidal sinus.

Group 4.—Sphenoidal sinus may come in close relation with the optic nerve and form the inner wall or the lower and inner wall of the optic canal.

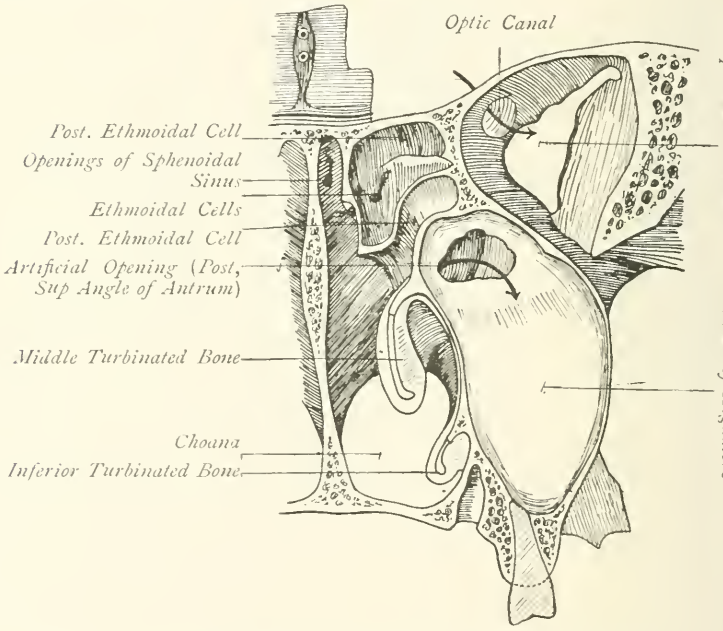

FIG. 3.—Posterior view of a frontal section showing the relations of sinuses to the optic canal and sphenoidal fissure (after Testut).

Group 5.—One sphenoidal sinus may be large and extend over to the other side.

Group 6.—Left posterior ethmoidal cell may form the inner wall, and the left sphenoidal sinus the lower wall of the left optic canal.

Exploration of the ethmoidal labyrinth by anterior rhinoscopy is very difficult even after partial removal of the middle turbinated bone, while direct inspection of the posterior ethmoidal cells is practically impossible.

The surgeon makes use of the following routes of access to the ethmoidal cells :—

(1) Orbital route (Knapp).
(2) Endo-nasal route (Grümwald).
(3) Trans-maxillary route (Laurent).
(4) Facial or trans-nasal route. Resection of nasal bones (Moure, Joubert).

The development of the ethmoidal cells does not commence till the 4th or 5th year of life, and is not complete till about the age of twenty.

The Sphenoidal Sinus.

The sphenoidal sinuses, situated in the body of the sphenoid bone, are usually two in number, separated by a delicate antero-posterior osseous septum and opening by narrowed orifices into the superior meatus of the nose.

These sinuses, which are evident shortly after birth, do not acquire full size until about the 23rd year of life. They are hardly ever of equal dimensions, but present extreme variations in size, shape, and extent.

Testut, in accord with the classification of Sieur and Jacob, gives the following types :—

(1) Sinuses of moderate dimensions (5 or 6 c. cm.), limited to the body of the sphenoid without extension into the alar or basal portions of this bone.

(2) Large sinuses (9 c. cm.) projecting in all directions, so that from their relations to neighbouring structures important and even serious complications may arise in the course of sphenoidal sinusitis or growths.

The projections or prolongations may be considered from their situation as :—

(a) *The anterior or optic projection* extends into the lesser wings and clinoid processes of the sphenoid bone, so that the optic nerve is brought into intimate relation with the sphenoidal sinus. Records show that this close relation occurs as often as 1 in 3 ; such relations are made the more intimate by the thinness or even absence of the bony partition and destruction of the membrane, so that injuries to the optic nerve, as rupture and neuritis following upon even a slight sphenoidal or ethmoidal sinusitis, are easy of explanation.

(b) *The antero-inferior or palatal projection* extending downwards comes into close relation with the postero-superior angle of the maxillary sinus, so that too extensive a thrust of an instrument employed in the treatment of antral trouble may project it into the orbit, pterygomaxillary fossa, or even into the sphenoidal sinus.

(c) *The pterygoid projection* extends into the base of the pterygoid process and comes into close relation with the vessels, lymphatics, and nerves traversing the foramen rotundum and Vidian canal, whereby new relations of vast clinical importance arise between the orbit, the pterygoid region, and the cavernous sinus.

(d) *The alar projection*, always accessory to an ever-

increasing pterygoid projection as it invades the greater wing of the sphenoid bone, may come into intimate relation even with the foramen ovale, the zygomatic and pterygomaxillary fossæ, so that in operations upon the Gasserian ganglion or its divisions the sphenoidal sinus may be implicated.

In short, it is possible for trigeminal neuralgia to be complicated by a mild sphenoidal sinusitis, whereas in all cases of obstinate trigeminal neuralgia the surgeon should make a careful examination of the accessory nasal sinuses prior to extensive operative measures.

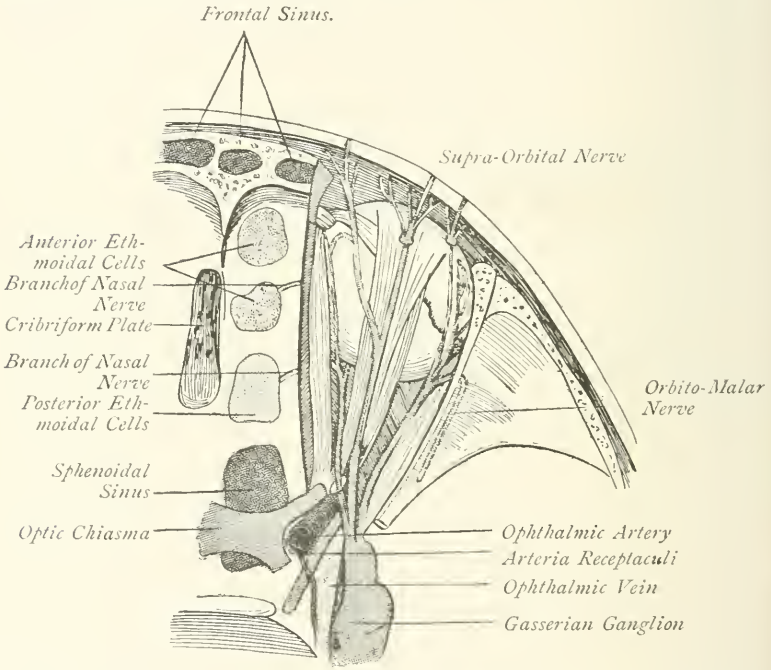

FIG. 4.—Diagram to show the relation of the ethmoidal cells and sphenoidal sinus to the inner wall of the orbit, the optic canal, and the sphenoidal fissure (after Testut).

(e) *The posterior or basilar projection* is not only rare but concerns this article in no way.

The sphenoidal sinus can be explored by catheterization of its orifice in the spheno-ethmoidal recess after removal of obstructing turbinated prominences, but the routes advised for opening up this sinus are :

(1) Orbito-ethmoidal route.
(2) Facio-ethmoidal route.
(3) Transverse-maxillary route.

As it is very unlikely that the sphenoidal sinuses are ever the seat of an isolated suppurative process, any of these three routes are to be recommended, inasmuch as other accessory, and probably infected, recesses are also opened up.

(3.) Small sinuses of less frequent occurrence may be only as large as a pea; in these instances a posterior ethmoidal cell may be seen projecting between the small sphenoidal sinus and the sella turcica, and thus come into close relation with the carotid artery and optic canal.

Venous drainage is carried through small foramina which perforate the lateral, superior, and posterior boundaries of these sinuses, so that these vessels open into the circular sinus, the cavernous sinus, and even into the transverse sinus Infective processes from sphenoidal sinusitis may thus give rise to septic thrombo-phlebitis of the intracranial dural sinuses, as is well known in cases of middle-ear disease.

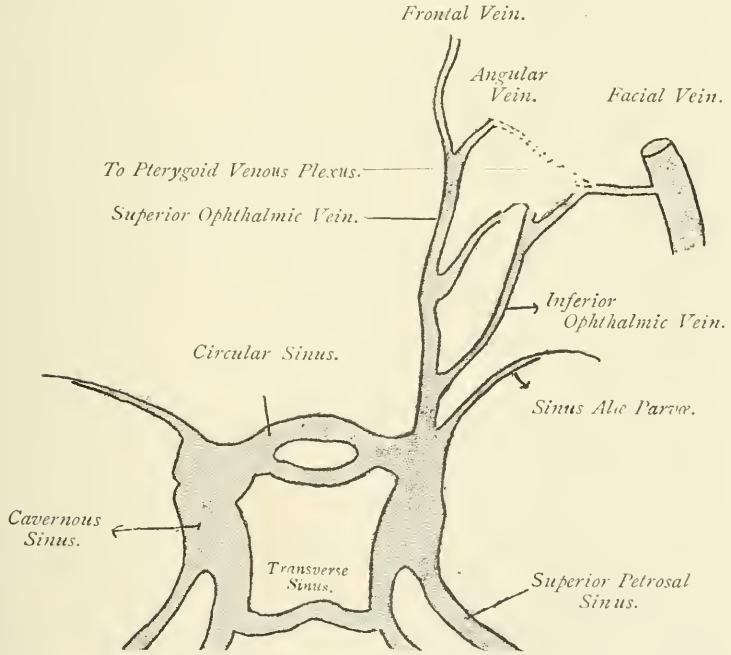

FIG. 5. Diagram illustrating certain extracranial and intracranial venous communications.

In protracted suppuration from the nose or into the naso-pharynx, suppurative sphenoidal sinusitis should be suspected; when intracranial and ocular symptoms are present, exploration is desirable.

The emissary veins, which are in the majority of cases the remains of the "primitive veins" carrying the blood from the "primary braincase," are looked upon by many authorities as possibly extra-cranial tributaries of the dural sinuses. For the present we need only view them as channels for the entrance of periphlebitic or endophlebitic lesions.

Further, the emissary veins which we need now consider are :—

(a) From the superior longitudinal sinus *via* foramen caecum to frontal vein.

(b) From the cavernous sinus *via* foramen ovale, foramen of Vesalius, Vidian foramen, foramen lacerum medium to the pterygoid plexus of veins.

(c) From the cavernous sinus *via* a circum-carotid plexus to the internal jugular vein.

(d) From the cavernous sinus *via* the ophthalmic veins to angular vein of the facial vein.

The Intracranial Venous Sinuses.

These sinuses, formed by the separation of the endosteal and meningeal layers of the dura mater, are rigid tubes which remain ever patent, being lined by a prolongation of the lining membrane of the veins. Their function is to return the venous blood from the brain and its coverings, the diploë (with a few exceptions), and also the greater part of the blood from the orbit and the eyeball.

Those which chiefly concern the anatomical region under consideration are :—

(a) The anterior extremity of the superior longitudinal sinus.

(b) Cavernous sinus.

(c) Circular sinus.

(d) Sinus ala parvæ sphenoidalis.

The anatomical relations of the nasal bones (to the ethmoid, the vomer, and its articulation with the sphenoid, the superior maxilla, and the frontal bones) make their fracture of far greater importance than the mere superficial disfigurement of the face would seem to indicate.

When the human skull is taken in the hand and inspected, definite lines (running vertically) of thickened or bony buttresses are observed—the thinner plates between these ridges are the better appreciated when a strong light is placed within the skull. If the calvarium be removed, and delicate electric lamps be placed in the various nasal and orbital cavities, the honeycombed labyrinth of cells which surrounds the orbit can be appreciated.

Heryng is credited with the first application of such methods of transillumination to the clinical study of diseases of the maxillary sinus.

In spite of these strong buttresses of bone, the base of the skull is particularly susceptible to fracture, owing to the large number of openings for the passage of vessels and nerves. The orbit serving as such a channel is the site of many a lesion produced by or indicative of the injury.

(a) Bullets or other penetrating objects entering the nose or orbit, frequently characterized by a slight external mark of the injury, may traverse a sinus and penetrate the skull, carrying with

them infective micro-organisms, although the wound be almost unnoticeable when the weapon is withdrawn. Ecchymosis may result from injury to a vessel. Nasal secretion may follow injury of one of the accessory sinuses, whereas emphysema of the orbit will point to a communication having been made with one of these sinuses. The lacrymal duct may be obstructed, and the antral and infundibular openings may be partially or completely occluded.

(*b*) Further meningeal or cerebral complications may arise immediately on or subsequent to infective processes in the accessory sinuses, or venous sinuses which communicate with the cutaneous surface directly and *via* the diploë, and may give rise to meningitis cerebral abscess, subdural abscess, and thrombophlebitis. Thus, great clinical interest attaches to the anatomical relations of these sinuses where exostoses and other tumours grow, whence septic processes extend, and yet the signs and symptoms divert the surgeon's view.

Tumours.—Sarcoma of bone or periosteum, carcinoma arising in the epithelium lining these sinuses by extending along interosseous crevices or intraosseous canaliculi permeate lymphatics—pressing upon vessels and nerves and even displacing the eyeball—long before any other appreciable evidence of their presence has been observed.

In all cases of bilateral sinusitis, syphilis is to be borne in mind. From the close relation of the muco-periosteum to the bone, syphilitic periostitis and osteitis is frequent, but in particular we may here allude to: (1) the endosinusal hypertrophic rhinitis which is the antecedent of atrophic rhinitis or ozœna, and (2) the uncertain origin of the osteoperiostitic affections of the base and anterior aspect of the skull demonstrable in the conditions of leontiasis ossium and its allied diseases. Nevertheless, the proverbial polymorphism of syphilis does not warrant us in transferring every lesion to its realm, as is frequently done (by the general surgeon) in orbital lesions.

The mucous membrane which lines all these air-cavities is continuous with the mucous membrane of the interior of the nose. Although lined with glands which secrete actively, it is within these sinuses closely adherent to the periosteum, so that its name "muco-periosteum" indicates how soon the bony walls may participate in an infective process.

The pathogeny of mastoid abscess, lateral sinus thrombophlebitis, extradural abscess, suppurative meningitis, and cerebral or cerebellar abscess as a consequence of otitis media purulenta has long been accepted. To-day the same sequence is known of the intracranial lesions which follow upon suppurative sinusitis of the accessory nasal cavities, but we hope from a closer association of rhinology and ophthalmology to find far more delicate clinical guides, whereby these allied branches will make still further surgical advancement.

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TRANSLATION.

EMPYEMA OF THE MAXILLARY ANTRUM, FOLLOWED BY ORBITAL CELLULITIS AND ATROPHY OF THE OPTIC NERVE OF THE SAME SIDE AND SYMPATHETIC OPHTHALMITIS.*

BY

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(Abridged translation by PERCIVAL J. HAY, M.D.)

Much has been written of late about the ocular complications of diseases of the accessory sinuses. If, in spite of this, I publish another case of this description, it is on account of the unusual and rapidly destructive course which it took, leading to optic atrophy on the side corresponding to the sinuses which were diseased, and to impaired vision in the other eye, although the sinuses on that side were not at all affected.

The patient, who was sent to me by my colleague, Dr. Texier, a specialist in diseases of the nose, was a well-built young woman, *æt.* 25 years, who had always enjoyed good health.

The course of the disease was briefly as follows:—the extraction of a molar tooth was followed by an acute sinusitis of the left maxillary antrum which spread to the neighbouring accessory sinuses and led to orbital cellulitis. This, in turn, caused sudden blindness of the left eye and optic atrophy. Although the sinuses of the other side remained healthy, the remaining eye became affected and its vision impaired owing to a neuro-retinitis.

The suppuration in the left antrum spread rapidly to the other sinuses with the exception of the frontal sinus. The development of such a multiple sinusitis will be readily understood when the intimate relations subsisting between the various sinuses are borne in mind. Further, the close proximity of the sinuses to each other and to the orbit, enables the septic process to extend to the orbit and eye. In our case orbital cellulitis ensued with extensive necrosis of the floor of the orbit; nothing remained of the floor but a bridge of bone formed by the lower margin of the orbit.

As a rule, when the inflammation of the sinuses is strictly limited to one side, the ocular complications remain confined to that side. It is exceptional for the disease to spread to the other eye, or for that eye to become affected in any way by the disease which has attacked the first eye. Ziem, it is true, has reported a case of recurrent iritis, in which the visual acuity of

* From *Die Ophthalmologische Klinik*, 5th September, 1907—communication originally read at the French Society of Ophthalmology 9th May, 1907, and published in *Annales d'oculistique*, July, 1907.

the eye on the healthy side fell to $\frac{1}{5}$, but returned to normal when the sinusitis present on the opposite side disappeared. Kuhnt has also described a case of unilateral sinusitis accompanied by bilateral limitation of the fields of vision; the field on the side affected, however, was more limited than the other.

The patient came under my care at the beginning of March. The first examination revealed blindness of the left eye due to complete optic atrophy. The eye was slightly divergent. The media were clear, and there was no sign of previous inflammation in the retina or choroid. In the right eye—the eye of the healthy side—there was a slight neuro-retinitis, without any swelling of the disc. The latter appeared hyperæmic, and its margins were blurred from extensive circumpapillary œdema. There were no retinal hæmorrhages. R.V. $\frac{1}{3}$. Visual field slightly contracted.

The history of the case was as follows:—on 20th December, extraction of second upper molar tooth. A fortnight afterwards great swelling of the whole of the left side of the face, especially the lids. Great proptosis and pain in the left eye. An abscess pointed in two places, *viz.*, in the upper and in the lower lid. Through the exits pus escaped in large quantities. Later on, a third opening formed lower down at the side of the nose. Three weeks after the onset of the cellulitis, the left eye suddenly became blind, and a month afterwards the right eye became affected. The left one had been quiescent for some time, when, as the patient said, it began to water and to redden, and pain, radiating to the opposite side, was felt around the eye. At the same time, vision in the right eye began to diminish. A few days afterwards, the pain and external irritation disappeared, but the sight of the right eye remained impaired. I was able to convince myself of the accuracy of the patient's statements, when, a week after she had been admitted under my care, I was witness of an attack, the left eye all at once became irritable and painful, and the right one sensitive to light. There was not a trace of iritis in either eye. Vision in the right one became reduced to $\frac{1}{4}$, and two days later to $\frac{1}{10}$. The field of vision was slightly diminished, and the ophthalmoscope showed distinct neuro-retinitis.

The state of affairs did not leave any doubt in my mind that I was dealing with a case in which the germs of disease were being carried from the left eye to the right one. The left one played the part of the exciting eye, although in this case I admit the transmission of the organisms occurred under circumstances differing from those which usually obtain in sympathetic ophthalmitis. There had been no injury to the eye and no inflammation of the uveal tract. The affection began with an orbital cellulitis which led to a retro-bulbar neuritis or perineuritis, the latter causing the sudden blindness and terminating in optic atrophy. From the eye primarily affected, the inflammation spread to the other eye. The organisms travelled

by a path which was given, *viz.*, the optic tract, since, as experience shows, an atrophied optic nerve does not prevent the transmission of pathogenic germs.

Pure neuro-retinitis is a rare manifestation of sympathetic ophthalmitis. There are, indeed, only twelve cases of this kind on record. In all of them the inflammation remained confined to the retina and optic nerve, whilst the uveal tract remained untouched before, as well as during, and after the disease.

I decided to deal with the failing vision by using the means adopted in threatening or existing sympathetic ophthalmitis, and excised the left eye, before any surgical treatment had been undertaken with regard to the sinuses. Vision improved to $\frac{1}{3}$ already in a few days ; the neuro-retinitis subsided, and ultimately disappeared without leaving a trace. The success of the treatment confirms the view that the case was one of sympathetic ophthalmitis. What else could it have been ? It could not have been a general infection, nor a cerebral lesion. The sympathetic disease did not develop in the usual way, yet it obviously was a genuine sympathetic ophthalmitis.

The eye was excised on 13th March, 1907. On 22nd March, Dr. Texier performed Luc's operation. By this time the right eye had improved considerably. The maxillary antrum contained enormous masses of polypoid tissue. The floor of the orbit was quite destroyed, the inferior orbital margin alone remaining. Through the opening one could distinctly feel Tenon's capsule. The antrum communicated freely with the nose ; the whole of the inner wall had been destroyed and a black sequestrum lay in its place. I resected the middle turbinate, and so was able to get at the sphenoidal sinus, the anterior wall of which I removed with the sharp spoon. This sinus also contained polypoid material which I scraped away. The walls of the cavities were then touched with zinc chloride, 1 : 10. The opening in the mucous membrane was sutured, and the cavity packed with gauze, the loose end of which was brought out through the nose. The gauze was removed on the second day. The wound healed by first intention. No pus appeared in the nose afterwards.

CURRENT LITERATURE.

NOTE.—Communications of which the titles only are given either contain nothing new or else do not lend themselves to abstract.

I.—THE ORBITAL VEINS.

Krauss, W.— On the orbital veins in man. (Ueber die Orbitalvenen des Menschen.) *Bericht der Ophthalmologischen Gesellschaft*, Heidelberg, 1907.

Krauss (Marburg) read a paper before the German Ophthalmological Congress at Heidelberg on his researches into the anatomy of the orbital veins in man, a subject which he said had been much neglected. The orbital veins were injected with various substances, among them oxide of mercury for obtaining X-ray photographs. Heads of adults were dissected, and several orbits of new-born infants were examined by serial sections.

Krauss found that the superior ophthalmic vein was the chief channel whereby blood left the orbit. Its anterior portion is related to the tendon of the superior oblique ; its centre to the optic nerve ; and its posterior portion to the outer edge of the sphenoidal fissure. The next most important venous trunk was always the lacrymal vein, which, starting in the forward portion of the orbit, joins the ophthalmic vein at a spot not far from the sphenoidal fissure. Generally, but by no means invariably, the inferior ophthalmic vein proved to be the third in point of size. It runs centrally along the floor of the orbit, and joins the superior ophthalmic vein at the sphenoidal fissure.

In most cases the thickest part of the superior ophthalmic vein is behind its middle point. It often narrows very considerably where it traverses the sphenoidal fissure, passing between the periosteum of the orbit and the dura mater to fall into the cavernous sinus. This junction is of such a nature that the vessel bends suddenly downwards to reach the lowest aspect of the sinus. There are often anastomoses at this point with the middle meningeal and other intracranial vessels, as those of the pia mater. Another anastomotic branch of the superior ophthalmic vein passes through the spheno-maxillary fissure and joins the pterygoid plexus.

The anterior half of the superior ophthalmic vein does not diminish in size—on the contrary, it often gradually enlarges. It divides into two branches where it crosses the tendon of the superior oblique, whose contraction may influence the amount of blood it contains. One joins the frontal vein, the other the angular ; there is also an anastomosis with the veins which return blood from the upper lid and the lacrymal sac. If one of

these branches be small, there is always a compensatory enlargement of the other, so that communication with the facial vein is invariably free. The importance of the facial vein as a channel of exit for the orbital vessels has so far not been sufficiently insisted upon.

The lacrymal vein not only empties blood into the superior ophthalmic vein, but has from 1 to 3 large twigs, which pass through the zygoma and join the temporal veins. There is also a constant anastomosis with both the ophthalmic veins.

The inferior vein is not only a collecting trunk, but is also a through passage to the face, many large branches joining the veins of the lower lid and ultimately reaching the facial vein. The inferior ophthalmic vein always anastomoses freely with the superior by arc-shaped branches, so that there is free communication between the orbital veins and those of the face, which allows at least as much blood to escape in front as behind into the cavernous sinus.

There are no valves in any of the orbital veins. They are all in communication with the arc-shaped vessels mentioned above, which form a more or less complete ring round the bulb. The venæ vorticosæ fall into this ring.

The relations of the vena centralis retinæ are difficult to work out by dissection, but it appears that the vessel in question generally reaches the ring of anastomatic veins described above. In some cases it seemed to join the cavernous sinus directly.

The final result of Krauss' investigation is that blood from the eye has a very free passage either forwards or backwards, the anastomoses with the face veins being generally the larger. The amount of blood making use of either of these two main channels probably depends largely upon the position of the head at the time. T. HARRISON BUTLER.

II.—BLINDNESS FOLLOWING OPERATIONS UPON THE NOSE.

Laas.—Two cases of contralateral disturbance of sight after operations on spurs of the nasal septum, one being complicated by blindness on the side of the operation and accompanied by meningeal symptoms. (Zwei Fälle von kontralateraler Sehstörung nach Operation der Spina septi narium, der eine kompliziert durch Erblindung auf der Seite der Operation und durch meningitische Symptome.) *Zeitschrift für Augenheilkunde*, Band XVIII, August, 1907.

After references to Onodi's anatomical investigations, **Laas** reports a couple of cases in which a minor operation upon the

nose, of every-day occurrence, was followed by serious ocular complications. The essential facts are given below :—

Case No. 1.—A bricklayer, aged 33 years, was affected with enlarged tonsils, hypertrophic rhinitis, and a spine and deviation of the septum nasi on the left side. Potassium iodide was administered without obvious result, although there were reasons for suspecting syphilis. The tonsils were removed, and a few days later, the hyperplastic turbinates on both sides were treated surgically. Nine days after the last operation, under novocain and suprarenin, the nasal spine was chiselled away in two pieces, which when reconstructed, measured 4cm. by 2·5cm. The first sign of ocular disturbance was noted a quarter of an hour after operation, when the patient complained of a glittering (*Flimmer*) before his right eye, and, on testing the sight roughly, it was found that the upper part of the uplifted finger could not be seen with that eye. The right pupil, bigger than the left, reacted sluggishly to light and to accommodation. Three days later, there was no free pus in the nose, and transillumination showed no differences between the sinuses on the two sides. The patient was first seen by Laas, the operation having been performed by another surgeon, the day after removal of the nasal spine. The right eye could only distinguish hand-movements. The upper half of the field of the right eye was blind, and was divided from the lower (seeing) half by an almost horizontal line. Ophthalmoscopic examination negative. As regards the left eye, sight, field, and fundus were normal. Twelve days after operation, R.V. fingers at 5 mètres, and the optic papilla was noted as being rather pale. A week after that, R.V. = 5/15, and optic disc unmistakably pale. The sight of the right eye improved to 5/10 and No. 3 Jaeger, although the disc became white, as in total atrophy. The hemianopic pupillary reaction was present.

Laas explains the sequence of events in the foregoing case on the assumption that the chiselling of the spur on the left side of the nasal septum produced a fracture of the walls of the right optic canal, thereby causing a partial tear of the optic nerve. In this patient there were probably anatomical peculiarities which predisposed to such an accident. The author again refers to Onodi's anatomical researches as showing how this contralateral effect could be brought about.

Case No. 2.—A workman, aged 26 years, consulted Professor Kuttner on account of an exostosis on the left side of the septum nasi. Under cocaine, the little growth was removed by means of a motor-saw, the entire process lasting for about one minute only and being free from any complication. As soon as the patient opened his eyes, which he had kept shut during the operation, he exclaimed that his left eye had become blind. He became feverish and irritable, and so was admitted to hospital on 18th December, 1894, presumably the day after operation. On reception, he was semi-conscious, with a temperature of 38·9° C. He was unable to walk unaided. His neck and spine were stiff; he resented any movement, however slight; and he passed urine and fæces beneath him. The left pupil did not respond to direct light, although it reacted promptly on convergence. The right pupil responded to direct light when thrown into the eye from the left or front and also to convergence. The indirect light-reflex, however, was absent. Movements of eyes intact. No fundus changes. The left eye was completely amaurotic. The right eye apparently was hemianopic as regards the temporal side. Lumbar puncture, undertaken five days after admission, showed that the cerebro-spinal fluid was scarcely even cloudy. By the beginning of January, 1895, the general condition had improved. The field of vision of the right eye then showed a large temporal defect, and the field, as a whole, resembled in outline a shamrock-leaf. A recurrence of the meningeal symptoms next occurred, accompanied by violent pains in the head, tenderness of the scalp, increased temperature, incontinence of the urine and fæces, and somnolence. These disquieting symptoms disappeared in the course of several days, and when the eyes were examined by Dr. Lehmann on 17th January, the condition was as follows: the retinal vessels were normal, but the temporal half of the left optic disc was pallid. The right optic disc showed no ophthalmoscopic changes. The left pupil was devoid of reaction to direct light, although it responded normally to indirect light, as well as to convergence.

The nervous symptoms gradually disappeared, and the patient was discharged from hospital 51 days after admission. The right vision (myopia corrected) was then 5/12, but the left eye was blind.

In explanation of the above case, Laas believes that the angle of the chiasma was wounded through fracture or fissure of the sulcus and optic canal. In this way the functions of the left optic nerve were completely and those of the right optic nerve partially destroyed. Here, again, anatomical peculiarities had probably a considerable share in determining the result. The meningeal manifestations might perhaps be accounted for by infection from the nose or sinuses gaining the meninges through the fissured bone. SYDNEY STEPHENSON.

III.—BLINDNESS FOLLOWING ORBITAL ABSCESS.

Bartels, Martin.—Concerning the anatomical basis of blindness following orbital abscess.* *Archiv f. Augenheilkunde*, LVI, No. 3, p. 267, and *Archives of Ophthalmology*, January, 1908.

The amount of pathological work done in regard to the causation of blindness from orbital abscess is not large. This fact lends additional interest to **Bartels's** case, in which the entire optic nerve was microscopically examined in serial sections. The facts follow :—

Clinical account.—On the second day after a girl, 12 years of age, had been operated on for left-sided sinus-thrombosis following disease of the middle ear, swelling of the lids and bilateral exophthalmos made their appearance. The patient was first seen by Bartels on the following day, when the lids were swollen, the eyeballs protruded and immobile, and the conjunctiva was œdematous. The fundus was normal, save for pallor of the optic disc. Seven days after the operation it was noticed that the right optic disc was prominent, but vision was normal. Visual aphasia was present. Pulse slow ; temperature 39·9°C. A diagnosis was made of abscess of the temporal lobe, with abscess of orbit, following thrombosis of the cavernous sinus. A couple of days later, quantities of foul-smelling pus were evacuated through an incision made in each upper eyelid, but despite drainage, the exophthalmos increased. Three days after this operation : visual aphasia ; vision normal ; choked disc in each eye. A further operation was undertaken two days later. The mastoid wound was then opened, and a large abscess in the temporal lobe of the brain was evacuated, and, in addition to this, both lower eyelids were incised, with the

* A brief abstract of Bartel's communication was published in THE OPHTHALMOSCOPE, 1907, p. 256.

result that much pus escaped. Next day, amaurosis of the right eye, but with the left eye coins could be recognised. Three days after that, the right retina showed a whitish discolouration, especially in the macular region, and linear hæmorrhages were present in the last-named, and also on the optic disc. The child died 36 days after the first operation.

Pathological account.—The autopsy, made by Dr. Schridde, disclosed the existence of an abscess of the left parietal and temporal lobes of the brain. The right and left cavernous sinsuses, as well as the circular sinus and the anterior third of the left superficial petrosal sinus were plugged. The transverse sinuses contained thick clots, but were not thrombosed. Bilateral abscess of the orbits, in the pus from which were found staphylococci, streptococci, and saprophytes. Double bronchopneumonia. The contents of both orbits were fixed in Müller's fluid, and stained with carmine. The specimens were embedded in celloidin, and serial sections made. On the right side, the following conditions were found: the orbit contained several large abscesses, lying within the muscular cone, but not pressing on the optic nerve. The pus lay principally in the fatty tissue, which included numerous thrombotic vessels. The orbital fascia was nowhere perforated, although infiltrated at one point. The larger arteries, especially the ophthalmic artery, were normal. On the other hand, the larger veins, especially the ophthalmic vein, were obliterated by organized thrombi. Muscles normal.

The central artery, within the lamina cribrosa, was normal, but behind that structure its endothelium was thickened, and farther back its lumen was obliterated by new-formed tissue, which contained many small vessels. The central vein, within the papilla and lamina cribrosa, was normal. At a distance of 3·5 mm. behind the latter it was entirely occluded by a mass of tissue made up of round and epithelial cells. The vessel was blocked for a distance of 1·6 mm. The orbital section of the optic nerve showed an area of necrosis, which surrounded the above-mentioned thrombotic portions of the central artery and vein. In the necrotic area, which stained badly, nerve-fibres were replaced by granular masses.

Remarks.—Commenting upon the above case, Bartels believes that the vascular obstruction was due not to emboli but to thrombi. The vein was first involved, and the condition, he thinks, was due to thrombosis or embolism of the vasa vasorum, possibly of bacterial origin. Accompanying this change in the wall, there was congestion of the vein, resulting from closure of some of the orbital veins. A venous thrombus was in this way formed. As a consequence of this, the arterial wall became compressed, and a thrombotic condition within the vessel followed. It is possible, however, that inflammation passed directly from the wall of the vein to the arterial wall, thus

resulting in a thrombotic-arteritis. The necrosis of the optic nerve, which involved the entire cross-section of the nerve in the region where both central vessels were occluded, was probably due to deficient nutrition from obstruction of both afferent and efferent vessels. As the necrosis showed no inflammatory changes, a bacterial infection may be excluded. The narrowing of the vein took place gradually, and before occlusion was complete, collateral branches were formed. This would explain the absence of larger hæmorrhages in the fundus, such as usually occur in thrombosis of the central vein. The intense retinal œdema seen at a later stage was probably due to the complete occlusion of the central artery and to thrombosis of some of the individual retinal vessels. How can we explain the blindness, which occurred on the fourteenth or fifteenth day of the illness? The artery was not entirely occluded at this period, inasmuch as the anæmia was first noticed later. It is, however, likely that the nerve-fibres in the retro-bulbar portion of the nerve were impaired as regards their nutrition, in consequence of thrombo-vasculitis of the central vessels, so that they become functionally inactive. The necrosis followed shortly after. The loss of vision, at the last, was due to occlusion of both central vessels, as well as to necrosis of the optic nerve and partial thrombosis of the vessels of the macula. The orbital abscess was due, in Bartels's opinion, to extension of a septic thrombosis of the sinus. The œdema of the lids and the exophthalmos were due to two factors: first, obstruction to venous outflow; and, secondly, the infectivity of the purulent inflammation. It is remarkable that despite thrombosis of the cavernous sinus, which probably existed in the first few days, there was no choked disc. Choked disc made its appearance, however, with the occurrence of abscess in the temporal lobe.

Bartels concludes a suggestive communication with the following **deductions**:—1. Blindness with orbital abscess may be caused by retrobulbar necrosis of the optic nerve, due to thrombosis of the pial vessels and thrombosis of the central vessels, in parts. 2. Through formation of a collateral circulation, both central vessels may regain their patency before and behind the thrombotic occlusion. Consequently, in spite of the thrombosis of the central vessels, the vessels on the papilla may appear to be normally filled. 3. The outer ocular muscles and nerves may remain normal, in spite of prolonged orbital abscess.

SYDNEY STEPHENSON.

IV.—THE CAVERNOUS SINUS.

(1) Stocker, Friedrich.—A rare case of thrombosis of the cavernous sinus following orbital thrombo-phlebitis. *Archives of Ophthalmology*, XXXV, 1906, 4, p. 373.

(2) Stoewer, P.—On the treatment of septic thrombosis of the cavernous sinus of orbital origin. (Zur Behandlung der septischen Thrombose des Sinus cavernosus orbitalen Ursprungs.) *Klin. Monatsbl. f. Augenheilkunde*, XLV, 1907, p. 147.

(3) Seggel, K.—Blindness caused by cerebral sinus-thrombosis following phlegmonous tonsillitis. (Erblindung infolge Tonsillitis phlegmonosa auf dem Wege der Thrombosinusitis cerebralis.) *Klin. Monatsbl. f. Augenheilkunde*, August-September, 1907.

(1) **Stocker** (Lucerne) reports the following case of thrombosis of the cavernous sinus due to thrombo-phlebitis of the orbital veins:—

A woman, aged 48½ years, was struck at the outer corner of her left eye by a window blind, and, three days after the accident, experienced a tearing pain in the left orbit and headache, associated with profuse perspiration. These symptoms became worse, and on the sixth day the temperature was 39°C., the left eyeball was protruded, and the patient much excited. On the eighth day, extreme exophthalmos, eyeball immovable, tender ecchymosis near outer canthus, œdema about left eye involving temporal fossa, patient apathetic, T. 38·8°C., P. 96. Under general anæsthesia, horizontal incision, about 3 cm. long, down to bone through ecchymosis near outer canthus of left eye. Escape of a few drops of pus. No bare bone with probe. Wound then enlarged, so as to expose the outer wall of the orbit for a depth of about 3 cm. Wound irrigated and drained. On the following afternoon, the clinical picture had undergone a change. Thus, the left eyeball was somewhat less prominent and the lids less tense, but, on the other hand, the right eyeball, not hitherto involved, had become immovable and so prominent that it could no longer be covered by the lids. R.V. ½. L.V. hand-movements at about 50 cm. T. 39.2°C. P. 92. It seemed as if the diseased process, commencing as a phlebitis in the left orbit, had extended through the cavernous sinus to the veins of the other orbit. The provisional diagnosis, therefore, was infective thrombosis of the cavernous sinus. On Professor Pflüger's recommendation, the original wound was enlarged, and a glass drain introduced into the left orbit. At this stage, there was hyperæmia of the right papilla and engorgement of the retinal veins, while the left fundus showed extensive œdema of the retina, particularly below and outwards, but no choked disc. On the day after the second operation, somewhat to Stocker's surprise, the condition of the patient was distinctly better. T. 37·6°, 38·2°, and 38·4°C. Thirteen days after the second intervention, the patient "was out of bed and feeling like herself." L.V. = fingers at 50 cm. Left papilla pale; retinal œdema reduced; no traces of hæmorrhage, past or present. A slight amount of exophthalmos only remained The right eye still showed slight protrusion, and its movements were somewhat restricted. Otherwise it was normal. The operation-wound was clean and granulating. When seen thirty-seven months after the beginning of the illness, the left optic disc was atrophic, and the arteries were reduced in size. The fundus showed broad, white stripes, with indistinct margins, which represented sclerosed choroidal vessels. The patient died four years after operation. No autopsy.

In Stocker's case, then, we have a primary traumatic infection near the outer canthus of the left eye, producing inflammation of the orbital veins, which extended as a thrombo-phlebitis through

the orbit to the left cavernous sinus. Thence the thrombosis passed through the circular sinus to the right cavernous sinus, and in that way stopped the blood-flow from the right orbit through the ophthalmic vein. The prognosis of infective thrombosis of the cavernous sinus, as everybody knows, is extremely bad. Stocker's case appears to be unique, in that it is the first recorded of recovery from thrombosis of both cavernous sinuses, caused by infective thrombo-phlebitis in one orbit, with subsequent occlusion of the veins in the other. The recovery may be accounted for in several ways. Stocker thinks that it is best explained on the view that the purulent thrombo-phlebitis of the smaller veins of the left orbit was transmitted through the ophthalmic vein to the left sinus, and that this resulted in the coagulation of the blood in the circular sinus, the right cavernous sinus, and the right ophthalmic vein, but without the presence of microbes or of their products, thus forming, as it were, an aseptic thrombus. At the same time, he is strongly of opinion that the timely evacuation of the primary infective focus was of great importance in determining the eventual recovery of the patient.

SYDNEY STEPHENSON.

(2) **Stoewer** (Witten) records three fatal cases of cavernous sinus thrombosis secondary to septic inflammation of the orbit. In the first case a furuncle of the left nostril gave rise to thrombophlebitis of the left orbit, in spite of surgical treatment. Fever, headache, œdema of the lids, chemosis, exophthalmos, and opacity of the lower half of the cornea were present. Treatment consisted in an incision along the upper orbital margin and deepening of the wound, followed by drainage. Only a little pus was found, which contained pneumococci and unidentified bacilli. A few days later, perforation of the cornea occurred, and beginning exophthalmos of the right eye indicated thrombosis of the cavernous sinuses. The patient died. The second case was practically a duplicate of the one just described. Again the septic process spread from the side of the nose to the orbit and thence to the cavernous sinus. A trace of pus, in which pneumococci were found, appeared on an incision into the orbital tissue. Neither by surgical interference, nor by the injection of 10 c.cm. of Römer's serum was the fatal issue prevented. No *post-mortem* examination was made in these two cases. The local and general manifestations of orbital sepsis appeared in a girl, aged six years, after measles. The lids of the affected right eye showed several, hordeola-like abscesses, in which staphylococci were found. Incisions were made along the upper and lower orbital margins, without meeting with pus. Also, the left lids became œdematous and the child died soon after. The autopsy proved the presence of pus in both cavernous, the circular, the beginning of the right upper and lower petrosal sinuses, and in the anterior and middle fossæ of the skull. No free pus was found in the orbit, but a purulent thrombo-phlebitis which was clearly continued from the

veins of the skin into the right orbital and the beginning of the left orbital veins.

On the strength of these experiences, Stoewer holds that the adopted treatment is of no avail in cases of thrombo-phlebitis without abscess-formation, and that any success achieved by it in such cases must have been due to chance. Stoewer, therefore, turns to the consideration of other possible resources in these desperate cases. He touches upon serum treatment, as recommended by Wood, recalls Knapp's case through which the accessibility of the cavernous sinus from the temple was proved, and, finally, suggests the laying open of the superior ophthalmic vein (if necessary after Krönlein's operation), through which the cavernous sinus could be drained, after aspiration of the pus. C. MARKUS.

(3) **Seggel's** (Munich) case was that of a soldier who entered the hospital suffering from phlegmonous tonsillitis, headache, rigors, and vomiting. At the same time there was protrusion of the right eye, chemosis, œdema of the lids, and impaired vision, while the left eye was normal. Two days later the right side of the neck became œdematous and painful, and the right internal jugular vein distinctly palpable. During the following months, frequent relapses of the tonsillitis occurred, with fever and headache of an intermittent character, but in the end the patient recovered. Not so favourable was the result with regard to sight. Four days after his admission into the hospital, the patient became completely blind in the absence of external changes in the left and of fundus-changes in either eye. In the course of the following weeks the protrusion and chemosis of the right eye disappeared slowly, but this eye remained blind, whereas a slight improvement occurred in the left: a small sector of the visual field upwards and inwards was restored, in which fingers were counted at one metre, the normal appearance of the fundi gave place to a complete pallor of the optic discs. Seggel accounts for the ocular complications in this case by assuming that the septic inflammation of the right tonsil caused a spreading thrombo-phlebitis in the following order: the first thrombosis occurred in the right jugular vein and its tonsillar tributaries, then followed the right inferior petrosal and cavernous sinus and the right orbital veins, the circular, and the left cavernous sinus. The blindness and final optic atrophy are ascribed by Seggel to the cutting off of the blood-supply to the intra-cranial part of the optic nerves as a result of the cavernous sinus-thrombosis. C. MARKUS.

V.—REMOVAL OF THE GASSERIAN GANGLION.

(1) **Durante, F.—A case of resection of the Gasserian ganglion. (Su di un caso di resezione del ganglio di Gasser.)** *Rivista Italiana di Ottalmologia*, May-June, 1905.

(2) **Weiss, K. E., jr.—Removal of the Gasserian ganglion and its relation to neuroparalytic keratitis in man. (Extirpation des Ganglion Gasseri und Keratitis neuroparalytica beim Menschen.)** *Die Ophthal. Klinik*, Juli 5, 1907, p. 385.

(1) **Durante's** operation was undertaken for the relief of severe neuralgia of the trigeminal nerve, after numerous other procedures had been tried. He adopted the method of Poirier, on account of the greater freedom which the plan gives, but after laying bare the second and third branches, he was compelled to stop by the uncontrollable hæmorrhage. The wound was plugged, and the patient put back to bed. Three days later, Durante completed the operation, and removed the ganglion, together with the stumps of the second and third branches, already previously divided, and a considerable length of the first branch. The result was complete relief. Durante strongly advises the performance in two stages. HAROLD GRIMSDALE.

(2) **Weiss** discusses the ætiology of neuroparalytic keratitis in connection with a case of trigeminal neuralgia, in which removal of the Gasserian ganglion was resorted to and was not followed by the disease in question. He reports that the patient has been under observation for four years subsequent to the operation, and that the present condition is as follows: cornea healthy, transparent, insensitive; fundus normal; V.=$\frac{5}{5}$. Pupil round and of same size as that of other eye; light-reflex brisk. No dryness of conjunctiva. No retraction of eye. Tension the same as in fellow eye. Slight ptosis; lid-reflex good; eye closed perfectly. Foreign bodies are not felt, unless they lodge in the superior fornix. Anæsthesia of the skin supplied by the fifth nerve; and absence of taste on the same side. The author believes there is little danger of neuroparalytic keratitis following the removal of the Gasserian ganglion. He reviews various theories as to the ætiology of the condition, but does not express an opinion in favour of any one of them. PERCIVAL J. HAY.

THE ACCESSORY SINUSES.

(1) Johnston, Richard H.—Exophthalmos caused by disease of the ethmoidal cells and frontal sinus—drainage—recovery. *Ophthalmic Record*, June, 1905.

(2) Thomson, St Clair.—Cerebral and ophthalmic complications in sphenoidal sinusitis. *Trans. Medical Society of London*, Vol. XXIX, 1906.

(3) Boon, H. A.—A case of intra-nasal tumour. *Ned. Tiidschrift voor Geneeskunde*, 1906, I, p. 314.

(4) de Stella.—Osteoma of the ethmoid bone. *Ned. Tiidschrift voor Geneeskunde*, 1906, I, p. 318.

(5) Hoffman, R.—On inflammatory affections of the orbit and of the eye in connection with suppuration of the nasal sinuses, with report of author's own cases. (Ueber entzündliche Affectionen in der Orbite und am Auge im Gefolge von Eiterungen der Nebenhöhlen der Nase unter Mittheilungen von eigenen Beobachtungen.) "Arbeiten aus dem Gibiete der Augenheilkunde." Festschrift zum 25 jährigen Professorenjubiläum von Hermann Kuhnt. Berlin, 1906. (Supplement to *Zeitschrift für Augenheilkunae*, Bd. XVI.)

(6) Green, John, junior.—Ocular signs and complications of accessory sinus disease. *Ophthalmic Record*, June, 1906.

(7) Thomson, StClair.—Fronto-ethmoidal sinusitis: three cases in which spontaneous evacuation took place in the region of the orbit. *Practitioner*, July, 1906.

(8) Moissonnier.—Osteo-periostitis consecutive to frontal sinusitis. (Ostéo-périostite consécutive à une sinusite frontale.) *Archives d'ophtalmologie*, août, 1906.

(9) Roy, Dunbar.—Phlegmon of the orbit, simulating a malignant growth, and its origin from the ethmoid cells. *British Medical Journal*, December 29th, 1906.

(10) Knapp, Arnold.—Sudden blindness following suppurative conditions about the eyeball. *Archives of Ophthalmology*, Vol. XXX, No. 6, 1906.

(11) Wood, Casey, A.—On some ocular symptoms common to or produced by affections of the nose and accessory cavities. *Ophthalmology*, January, 1907.

(12) Guttman, John.—Empyema of some of the accessory sinuses of the nose complicated by an orbital abscess. *New York Medical Journal*, January 28th, 1907.

(13) Brawley, Frank E.—The relation of disease of the nasal accessory sinuses to disease of the eyes. *Journ. American Medical Association*, March 23rd, 1907.

(14) Coppez, H.—Two cases of blindness due to sphenoidal sinusitis. (Deux cas de cécité par sinusite sphenoidale.) *Clinique des Hôpitaux de Bruxelles*, 24 mars, 1906, and *Rev. générale d'ophtalmologie*, 1er avril, 1907.

(15) Birch-Hirschfeld, A.—Contribution to the knowledge of affections of the optic nerve in connection with affections of the posterior sinuses of the nose. (Beitrag zur Kenntniss der Sehnerven Erkrankungen bei Erkrankung der hinteren Nebenhöhlen der Nase.) von Graefe's *Archiv f. Ophthalmologie*, Bd. 65, 3, 14 Mai, 1907.

(16) Rollet, E. — Fronto-orbital mucocele. (La mucocèle fronto-orbitaire.) *Revue générale d'ophtalmologie*, 31 mai, 1907.

(17) Cabannes.—Dacryocystitis and maxillary sinusitis due to gonococci in a newly-born child. (Dacryocystite et sinusite maxillaire à gonocoques chez un nouveau-né.) *Soc. de méd. et de chir. de Bordeaux*, 16 fevrier, 1906, and *Rev. générale d'ophtalmologie*, juin, 1907.

(18) Paterson, James Allen.—Ocular diseases of nasal origin. *Ophthalmology*, July, 1907.

(19) Johnston, Richard Hall.—Functional eye disturbance caused by disease of the antrum of Highmore. *Ophthalmology*, July, 1907.

(20) Delneuville.—Two cases of nasal disease with ocular complications. *La Clinique Ophtalmologique*, 25 septembre, 1907, and *Bull. de la Société belge d'ophtalmologie*, No. 22, 1907.

(21) Wildenberg, van den.—Osteomyelitis of the superior maxilla and of the ethmoid with empyema of the sinuses and orbit. (Ostéomyelite du maxillaire supérieur et de l'éthmoide avec empyème des sinus et de l'orbite.) *Presse Oto-Laryngologique belge*, octobre, 1906, and *Rev. générale d'ophtalmologie*, octobre, 1907.

(22) Langworthy, Henry Glover. — The Killian frontal sinus operation; remarks on the use of the X-ray in sinus disease. *Ophthalmology*, October, 1907.

(23) Britto, Victor de.—Clinical and therapeutical considerations respecting two cases of frontal sinusitis. (Considérations cliniques et thérapeutiques à propos de deux cas de sinusite frontale.) *Archives d'ophtalmologie*, octobre, 1907.

(24) Bruckner, A.— A clinical and statistical contribution on the relations existing between the diseases of the eye and the nose. (Klinisch-statistischer Beitrag zur Kenntniss des Zusammenhanges zwischen Nasen- und Augenerkrankungen.) *Arch. f. Augenheilk.*, Oktober, 1907, p. 316.

(25) Johnston, Richard H.—Some personal experiences with frontal sinus disease. *American Medicine*, November, 1907.

(26) Turner, A. Logan.—Mucocele of the accessory nasal sinuses. *Edinburgh Medical Journal*, November and December, 1907.

(27) Posey, Wm. Campbell.—The position of the ophthalmologist in the treatment of diseases of the accessory sinuses of the nose. *Trans. Amer. Ophthalmological Society*, Vol. XI, Pt. II, 1907.

(28) Casali, A.—A rare case of mucocele of the right frontal sinus. *Annali di Ottalmologia*, Vol. XXXVI (1907), fasc. 3-4, p. 267 to 280.

(29) Cunningham, H. H. B.—A case of empyema of the sphenoidal sinus, together with remarks upon the anatomy of the sphenoidal sinuses. (Ein Fall von Empyem der Keilbeinhöhle mit Augensymptomen nebst Bemerkungen über die Anatomie der Keilbeinhöhlen.) *Zeitschrift f. Augenheilkunde*, XVII, 1907, p. 345.

(30) Griffin, O. A. — Ocular symptoms of nasal origin. *Journ. American Medical Association*, November 9th, 1907.

(31) Dunn, John. A case of bilateral painless dilatation of the frontal sinuses due to death of the lining mucous membrane. *Archives of Ophthalmology*, Vol. XXXVI, 1907, No. 2, p. 212.

(32) Knapp, Arnold.—Optic neuritis after disease of the posterior ethmoidal cells. *Archives of Ophthalmology*, January, 1908.

(33) Birch-Hirschfeld, A.—The relations of orbital inflammations to disease of the nasal sinuses. (Die Beziehungen der entzündlichen Orbitalerkrankungen zu den Erkrankungen der Nebenhöhlen der Nase.) *Klin. Monatsbl. f. Augenheilkunde*, Januar, 1908.

(34) Beauvois, A.—Exophthalmos in the maxillary sinusitis of babies. (Exophtalmie dans les sinusites maxillaires des nouveau-nés.) *Recueil d'ophtalmologie*, février, 1908.

(35) Reber, Wendell.—Orbital abscess secondary to nasal disease. *American Journal of Ophthalmology*, February, 1908.

(36) **Syme, W. S.—Operative procedures in relation to disease of the frontal and sphenoidal sinuses.** *Glasgow Medical Journal*, March, 1908.

(1) **Johnston** is inclined to think that his case was due to an acute exacerbation of a chronic disease of the frontal and ethmoidal cells. He replies to the question, what was the mechanism of the exophthalmos, by stating that since there were no symptoms of orbital abscess and drainage of the accessory cavities promptly cured the condition, it must be assumed that the accumulation of pus in the frontal and ethmoid cells caused a bulging of the thin bony walls between these cavities and the orbit, with consequent pushing forward of the eyeball: prompt treatment relieved the patient before the pus could break through into the orbit and set up abscess. C. A. OLIVER.

(2) "The frequent origin of intracranial complications from suppuration in the ear is now generally appreciated, but a similar association has not yet been fully established between the brain and the nose." With the object of showing that such an association is more common than is generally supposed, **St Clair Thomson** (London) gives a full account of two cases in which the sphenoidal origin of intracranial suppuration was fully established. In one case there was acute suppurative basic meningitis, and in the other thrombo-phlebitis of the cavernous sinus.

He then makes a full abstract of 40 other cases in the literature, where death from intracranial complications was due to septic infection from the sphenoidal sinus. All cases are rejected from the abstract in which the cerebral invasion was due to traumatism of the sphenoidal sinus, tumours originating in it or traversing it, syphilitic, tuberculous, or other specific processes, or where there was any possibility of the intracranial complications being due to suppuration in any other accessory cavity. From the total of 42 cases the author, after tabulating the classes into which the cases fall, such as meningitis, thrombosis, intracranial abscess, and so on, proceeds to the formation of a symptomatology of sphenoidal sinusitis and of cerebral infection, and to a discussion of the pathological anatomy, bacteriology, pathogenesis, prognosis, operative possibilities, and general treatment. The paper extends to 57 pages, and is mainly on the subject of cerebral invasion. Only those ophthalmic complications which were associated with the cerebral invasion are included: cases where the sphenoidal sinusitis affected the eye only, and where fatal consequences did not follow, are rejected from this list of cases. To make a satisfactory abstract of Thomson's paper, as a whole, would probably occupy an unwarranted amount of space in an eye journal; therefore, since the author has himself excluded the direct relation of sphenoidal sinusitis and eye symptoms other than those associated with cerebral invasion, it may suffice here

to deal only with such eye symptoms. But it should be understood that the paper, as a whole, is of great interest, although not lending itself readily to abstract.

Symptoms of Sphenoidal Sinusitis.—In speaking of *pain* in connection with sphenoidal sinusitis, the author says that it is not referred to any regular and definite point. Apparently, it may be almost anywhere, but it is characteristic of sphenoidal disease if the patient states that the pain is deep in behind the eyes.

Symptoms of Cerebral Infection.—In thrombosis of the cavernous sinus and in meningitis the eye symptoms are of importance, more especially in the former, because the possibility of thrombosis of the cavernous sinus is generally first suggested by the condition of the eyes.

Thrombosis of cavernous sinus.—The three chief eye changes are papillary œdema, chemosis, and exophthalmos. They develop from six to sixteen days from the onset of symptoms indicating the spread of infection. Proptosis and chemosis, which may not occur in a rapidly fatal case, generally start on one side and develop in the other from one to six days later. There may be anæsthesia or ulceration of the conjunctiva, or opacity of the cornea. Ocular palsy is the rule. The condition of the pupils varies not only in different cases but in the same case at different times. In rapid cases the fundus may be normal, and in some cases the absence of neuritis has been specially noted; but usually there is congestion of retinal veins, with or without congestive changes in the nerve-head. Optic atrophy was noted in one case.

The vision is difficult to determine. It varies from "good" vision to complete blindness. In one case there was tenderness of the eyeball.

Meningitis.—Exophthalmos, or immobility of the eye, rarely occurs. There may be pain on backward pressure of the eye. Paralysis of various ocular muscles may or may not occur. The pupils vary. They may be equal and reacting, unequal, or dilated. Fundus congestive changes may or may not be present.

On reading over the cases which St Clair Thomson has collected one is struck by the fact that in meningitis much more often than in thrombosis of the sinus there is either no mention of examination of the eyes, or else the remarks are incomplete.

In the following more or less isolated cases of cerebral infection, the eye symptoms are given for each case:—

Intracerebral abscess (1 case).—Diminishing vision and mydriasis. No mention of fundi.

Meningeal septicæmia (2 cases).—(1) Exophthalmos with divergent strabismus and loss of vision on one side. No mention of fundi. (2) Contracted pupils. No further mention of eyes.

Encysted abscess (1 case).—Double optic atrophy from neuritis $2\frac{1}{4}$ years before death. Two months before death, proptosis of left eye.

Phlebitis of cavernous sinus and pyæmia (1 case).—Strabismus, proptosis restricted movement of left eye. Fundi normal.

Intracranial hæmorrhage.—Ophthalmoscopic examination negative.

The author says, in his concluding remarks, that "if the association of sphenoidal sinusitis with disease in the orbital and cranial cavities has not been hitherto more fully substantiated, this is partly due to the fact that neither physicians nor surgeons attach much importance to the condition of the nasal cavities either at the bedside or on the *post-mortem* table. . . . I hope that in view of my findings, pathologists will more regularly carry the *post-mortem* examination through to the neighbouring pneumatic spaces of the nose. . . . . I venture to urge that in cases of headache and neuralgia, in intracranial inflammation, in the presence of thrombosis of the ophthalmic vein or cavernous sinus, the nose and its accessory sinuses should be examined as regularly as are the ear and the eye, and that in all cases of inexplicable retinitis, papillitis, and optic atrophy the nose requires exploration."

ERNEST THOMSON.

(3) In **Boon's** case a watering eye had been treated for a long time without result, but after removal of a tumour from the nose, cure followed spontaneously. G. F. ROCHAT.

(4) In one of **De Stella's** cases an osteoma of the ethmoid protruded into the orbit, causing exophthalmos. G. F. ROCHAT.

(5) **Hoffman's** paper is based on anatomical researches of the parts affected and on clinical observations by himself and others, and although not containing anything quite new, is very instructive, on account of the thoroughness with which the distinctive characters of orbital affections, according to the site of the primary trouble, are discussed. At the same time, it must be borne in mind that whereas orbital complications in affections of the frontal sinus have been known for many years, the recognition of the practical importance of empyema of the maxillary, ethmoidal, and sphenoidal sinuses is of comparatively recent origin. Although affections of the visual apparatus, more especially of the optic nerve, are most frequent in sphenoidal and dangerous complications from the orbit most commonly seen in ethmoidal and maxillary empyema, suppuration and chronic affections of the frontal sinus are the most important, as they frequently lead to trouble in the orbit, although they rarely threaten any real danger to the visual function. The most common affection there is periostitis of the orbital roof or abscess between the bone and the periorbitum, which, as the latter is fairly resistant, rarely perforates into the orbit proper. Sometimes the lacrymal sac is also affected, although much more rarely than in maxillary empyema. A subperiosteal abscess may here closely resemble suppurative dacryoadenitis.

Maxillary empyema is, as a rule, the connecting link between caries of the teeth and abscess of the orbit. It may cause chronic periostitis or an orbital abscess. The first leads to periosteal thickening, which may give rise to serious trouble if it presses on the optic nerve or interferes with the muscular structures at the base of the orbit; but it can be absorbed at practically any stage of development. Amongst the indirect consequences of suppuration of the maxillary sinus we must mention iridocyclitis, cataract, and blepharospasm (Kuhnt). Ethmoidal sinusitis may lead to circumscribed subperiostal abscess without perforation of the lamina papyracea (*abscés circonvoisins*). These cases may be easily mistaken for primary orbital ones, and only rhinological examination reveals their real character. The ethmoidal cells are particularly liable to lead to orbital complications, because their stroma is very loose, so that polypoid growth, which stops the outflow, is common. Affections of the sphenoidal sinus are dangerous on account of the near proximity of the chiasma and the optic foramen. It is generally accepted that unilateral retrobulbar neuritis points to a sphenoidal or nasal origin, and bilateral to an intracranial affection. But suppuration of the posterior ethmoidal cell on one side may lead to bilateral trouble and even to crossed hemianopsia (Onodi). Other complications of sphenoidal empyema have also been reported, such as neuritis nervi optici, ptosis, supraorbital neuralgia, affections of the sphincter pupillæ, and double vision, all due to periostitis. Finally, we must not forget another nasal sinus, the pathology of which is generally but wrongly neglected in this connection, *viz.*, the saccus lacrymalis, which in structure and character closely resembles the other sinuses, and affections of which may, in bad cases, spread to the orbit and lead to suppuration of its contents. R. GRUBER.

(6) **Green** reviews briefly the more important ocular conditions associated with disease of the accessory sinuses, and then alludes to the ocular signs of sinus trouble which might lead one unskilled in rhinoscopic examination to suspect the existence of sinus disease. 1. **Orbit.**—A majority of the inflammations of the orbit originate from a sinusitis. The particular sinus involved may sometimes be determined by the direction in which the globe is displaced. Variations in the degree of the exophthalmos are rather characteristic of sinusitis. 2. **Optic nerve.**—The nerve is especially apt to be implicated in sphenoiditis and posterior ethmoiditis. Tumours of the sphenoid, on the other hand, do not ordinarily involve the optic nerve, but may exceptionally cause atrophy from pressure. 3. **Extra-ocular muscles.**—Complete paralysis of all the muscles may in rare instances be traced to an apical cellulitis of the orbit, of sphenoidal or ethmoidal origin. Of greater frequency is the partial paralysis of one muscle or of a group of muscles. Such pareses may occur both in suppurative and

catarrhal conditions of the accessory sinuses. 4. **Lacrymal apparatus.**—An empyema of one of the sinuses may empty into the lacrymal sac. More frequently, however, the pus finds its way into the tissues which surround the sac, thus giving rise to the so-called "prelacrymal abscess." 5. **Eyelids.**—Moderate œdema of the lids, most marked in the morning and on bending forward, is often associated with sinus disease. The œdema is often unilateral and corresponds to the side of the affected sinus; it is apt to be confined to the nasal half of the upper lid. 6. **Cornea.**—Herpes-like blisters of the cornea, in consequence of implication of the V nerve as it passes along the outer wall of the sphenoidal sinus, have been mentioned by Posey and Ellinger. 7. **Choroid.**—It has been said that certain choroidal inflammations may originate from diseased sinuses. Such claims, according to Green, "can only be regarded as pleasant flights of the ophthalmo-rhinological imagination."

As regards the other point, namely, the ocular signs that would lead one to suspect the existence of an underlying affection of the sinuses, Green lays stress upon the marked variation in headache lacrymation, photophobia, and so forth, that may occur from day to day. With regard to the headache of sinus disease, it is distinguished by the fact that it occurs in the morning, while the location of the pain may be significant of the sinus involved. A valuable sign of frontal and ethmoidal mischief is to be found in the pain evoked by pressure against the upper-inner wall of the orbit, or in the region of the pulley of the superior oblique tendon. Asthenopia, which persists after correction of ametropia or muscular imbalance, should immediately suggest a rhinoscopic examination. A unilateral œdema of the optic disc and dilatation of the retinal veins may be the only sign of a posterior ethmoiditis or sphenoiditis. In the presence of one-sided exophthalmos, an examination of the nose should always be made, and the same procedure is advisable in choroidal or vitreous disturbances, of which the cause is not obvious. Green concludes a very practical communication with the following words:—"In many cases of sinus diseases the diagnosis presents many difficulties, even to the skilful rhinologist, and I am inclined to agree with Jackson (*Journ. Amer. Med. Association*, September 9th, 1905) that often more reliance can be placed on a certain clinical association of symptoms than on the rhinoscopic findings."

SYDNEY STEPHENSON.

(7) In this communication, read before the International Congress of Medicine in Lisbon, **St Clair Thomson** (London) reports three cases of fronto-ethmoidal sinusitis in which spontaneous evacuation of the pus took place in the region of the orbit instead of into the nose, as usual. Such cases, Thomson remarks, are rare in rhinological practice, possibly because some of the patients are treated by the general surgeon,

and others by the ophthalmologist. In outline, Thomson's cases are as follows :—

Case No. 1.—A female, aged 18 years, developed as a sequel to influenza, an abscess at the inner corner of the left eye. The abscess was evacuated by another surgeon and bare bone felt on the inner wall of the orbit. When seen by Thomson, the left upper eyelid showed a wine-like staining, and a fistulous opening, secreting pus, was present close to the inner canthus ; bare bone could be felt in the direction of the ethmoid. The condition is shown in Fig. 1. Transillumination showed complete obscurity of the left maxillary and frontal sinuses. After muco-pus had been cleared away from the left middle meatus and the post-nasal space, pure pus appeared in the left nostril and poured out from the fistula at the inner corner of the eye. Three weeks later, the left maxillary sinus was punctured from the nose. Ninety-eight days after that operation, recovery was complete—fistula closed and accessory cavities on both sides freely and equally translucent. This case shows in a very

Fig. 1.—*Suppuration in the left frontal, ethmoidal, and maxillary cavities. Congestion of left upper eyelid ; fistula at inner canthus, discharging pus, and leading down to the fronto-ethmoidal region.*

happy way the diagnostic value of transillumination when the cavities on one side alone are affected. It also proves that in recent infections, such as the one just described, early incision may be adequate to cure.

Case No. 2.—A lad, aged 11 years, developed œdema of the lids of the right eye, along with tenderness at the upper-inner angle of the orbit, and a temperature of 101°F., after a slight "cold" and sore throat. Several inmates of the Home which sheltered this lad had suffered from "colds" and slight tonsillitis. When seen by Thomson, the right eye was closed by œdema and the left was more or less occluded. Over the region of the right frontal sinus lay a diffuse, soft, red, and tender swelling. No discharge from nose. Under rest in bed, calomel, fomentations, and steam inhalation of menthol, matters improved until thirteen days after admission to hospital, when there was a recurrence. The condition two days later is shown in Fig. 2. Under chloroform, the swelling was incised and pus evacuated. Further, the frontal sinus was opened, but not curetted or drained into the nose. No stitches

were introduced, but the wound was stuffed with gauze, and allowed to heal from the bottom. No reaction: patient up on the fourth day. When seen some four months after operation, recovery was complete. The pus evacuated from the abscess contained m. catarrhalis in pure culture. This case is noteworthy, since the frontal sinus is seldom evident before the seventh or eighth year, and only develops decidedly at puberty. Thomson has never met with frontal sinusitis before in a patient so young as eleven years.

Case No. 3.—A woman, aged 35 years, was admitted with a fistula in the centre of the right upper eyelid (which had followed the evacuation of an abscess seven weeks before) and diplopia, due to paresis of the right superior oblique muscle. As the result of examination, Thomson hoped that the fistula communicated with a closed empyema of the right frontal sinus, but, unhappily, the anticipation was not realised. It was subsequently found that there was disease of the frontal sinus and ethmoidal sinus, so that a Killian operation had to be performed on the right side. Seven weeks later, the left side became involved, and the same operation was

Fig. 2.—*Abscess over root of nose, originating in the right frontal sinus, and due to the micrococcus catarrhalis.*

repeated on the left sinuses. Subsequently, both maxillary sinuses were opened. The instructive point is that what at first appeared to be a simple case was subsequently found to be associated with chronic suppuration in all the accessory sinuses on both sides of the nose, although no pus was discovered in the nasal chambers. The case, therefore, was an example of so-called multi-sinusitis. The patient, after many months of treatment, made a good recovery.

SYDNEY STEPHENSON.

(8) **Moissonnier** (Tours) met with a case of osteo-periostitis of the frontal bone about a month after an attack of nasal and faucial diphtheria. The patient was a healthy-looking girl, of 17 years. The diphtheritic infection had evidently gained the right frontal sinus, where it had set up sinusitis and involved, as a secondary effect, osteo-periostitis of the margin of the corresponding orbit. The inflamed parts were incised, pus (which

contained staphylococci alone) was released, and bare bone was felt with the probe, although no communication with the sinus could be made out. Several months later, in consequence of a recurrence, a large incision was made, and a sequestrum, about the size of a two franc piece, was removed from the anterior wall of the sinus. The sinus itself, as well as the naso-frontal duct, was first curetted and then cauterised with chloride of zinc, and, finally, drained with a piece of gauze. But a month later, there was a relapse of the periostitis, and two bits of dead bone were taken away. After another relapse, the patient was definitely cured. SYDNEY STEPHENSON.

(9) The chief point in this case is a mistaken diagnosis of tumour caused by a slow onset without acute symptoms. On proceeding to exenteration of the orbit, pus issued at the first incision under the orbital margin. The ethmoidal wall was found to be broken down. Drainage was established into the nose. In two weeks, patient was dismissed from hospital, his vision having gone up from 2 cm. to $\frac{20}{40}$. **Roy** pleads, in the words of Professor Onodi, for the joint rhinological and ophthalmological study of disease of the posterior accessory sinuses of the nose. ERNEST THOMSON.

(10) **A. Knapp** (New York) reports three cases of sudden blindness following orbital suppuration. In such cases the ophthalmoscopic picture is that of embolism of the central artery of the retina, with consecutive optic atrophy and obliteration of the arteries. The ophthalmoscopic picture agrees with that observed in facial erysipelas with antecedent exophthalmos. Knapp's first case, in a woman of 50 years, followed Kuhnt's operation for empyema of the frontal sinus. On the second day after operation, it was found that the patient was blind in the eye corresponding to the affected sinus. Ophthalmoscopic examination revealed an embolic process. The disc eventually became atrophic, and the woman remained blind. The second case, in a girl of 16 years, suffered from periostitis after filling of decayed teeth. Five days later an abscess opened in front of a canine tooth. The patient then found that she was unable to see with one eye. When examined three weeks after the teeth had been "stopped," the ophthalmoscope showed a white optic papilla, with normal retinal vessels. In the third case, an orbital abscess developed after a penetrating wound by a lead pencil. The abscess was evacuated surgically. The optic disc was white and the retinal arteries were very small: V.=O.

(11) **Wood** (Chicago) emphasises the importance of certain conditions which are worthy of notice both from the ophthalmological and the rhinological point of view. Such are headache, vertigo, lacrymation, œdema of the lids, asthenopia, and affections of the extra-ocular muscles.

(12) **Guttman's** case is interesting upon account of the

foudroyant onset of the disease, in which, had not prompt surgical procedure been resorted to, not only would the eye have been threatened, but also the patient's life. C. A. O.

(14) **Coppez** (Brussels) reports two cases of blindness due to sphenoidal sinusitis. The first case occurred in a woman of 58 years, who was seized after an attack of influenza with vomiting, exophthalmos, and who lost her sight in the course of a fortnight. On examination, exophthalmos, paralysis of the VI pair, and blindness due to post-neuritic atrophy. Ethmoiditis and purulent sphenoiditis treated by Krönlein's operation (Bugs). Coppez's second case was less conclusive. Sight was lost in the left eye from optic atrophy and in the right eye it was 1/6, there were anæsthesia of the first two branches of the trigeminal, and pains in the nape of the neck. The sphenoidal sinus was opened, but no pus was found, and all the symptoms persisted.

E. R.

(15) It is a well-known fact that inflammation or tumours of the posterior sinuses (sphenoidal and the posterior ethmoidal cells) are apt to affect the optic nerve and the orbit, and to lead to impairment of vision or to complete blindness. These cases are perhaps less rare than is generally thought, since the original symptoms may be quite insignificant, and the ocular symptoms the first to draw attention to the disease. From this point of view, **Birch-Hirschfeld's** (Leipzig) first three cases are extremely important The primary impairment of vision seems to be constantly a relative central scotoma with intact outlines of the fields, and all cases should therefore be carefully examined for it, as an early operation, with favourable prognosis, might thereby be justified. The principal points of difference from the clinically somewhat similar toxic or infectious neuritis are: the unilateral affection (although bilateral cases are also recorded), and the relatively acute onset and progress, the relative scotoma becoming absolute and the field secondarily contracted. Birch-Hirschfield had also an opportunity to examine a case where the central scotoma was due to a cancer that had invaded the orbit from the posterior ethmoidal cells. He found here an isolated affection of the papillo-macular bundle behind the entrance of the vessels. The anatomical changes consisted in œdema, swelling and proliferation of the glia-cells and destruction of nerve-fibres, which he thinks were due to venous stasis, especially in the recurrent branches of the central vein, but also to toxic agencies. He recommends in sinus affections resection after Kroenlein, which makes exposure of the point of perforation easier and facilitates drainage towards the nose.

R. W. GRUBER.

(16) In this article, excerpted from the new *Encyclopédie française d'ophtalmologie*, **Rollet** (Lyons) discusses mucocele of the frontal sinus from the symptomatic, pathogenic, and diagnostic standpoints, but gives no account of treatment. The affection,

commonest in young people and generally unilateral, is slow and insidious in origin. It is accompanied by frontal headache, sub-orbital neuralgia, and sensations of oppression, as in coryza. Sometimes there is nasal secretion. Then, a swelling at the supero-internal angle of the orbit appears. When fully established, there are three cardinal signs: orbital swelling, exophthalmos, and naso-orbital hyperostosis. Palpation of the orbital swelling reveals that it is soft, fluctuating, and free from adhesion with the skin, and that it is attached to the supero-internal part of the orbital roof, while no flow of tears, mucus, pus, or blood, takes place from nostril or tear passages. Nor does pressure cause cephalic pain or tendency to faint. With the head hanging down, there is no alteration of the tumour when the patient blows his nose. Exploratory puncture reveals a transparent, ropy, slightly yellow fluid. The exophthalmos is either slight or absent. Naso-orbital hyperostosis is a curious deformity at the root of the nose which is pathognomonic of distension of the frontal sinus by mucus, pus, or benign tumour. Examination of the nose usually fails to reveal any diagnostic point.

Regarding pathogenesis, Rollet considers the inflammation of the mucous membrane of the sinus, or of its 15 mm. long canal, to be primary, and the bony changes secondary, not *vice versa*.

As to the course of the trouble, it is essentially slow, and may last seventeen or eighteen years. There is a constant risk of empyema. Spontaneous cure, by evacuation of the fluid through the nose, may occur. The condition may be diagnosed early by the sub-orbital and supra-orbital pain, sensation of numbness (*engourdissement*), variation in the mucous secretion of one nostril, and, finally, pain and swelling under the supero-internal angle of the orbit. In the later stages it has to be distinguished from lacrymal mucocele, from chronic empyema, and from acute or subacute empyema of the frontal sinus; from malignant and benign tumours of the frontal sinus; from myxomatous tumours of the nose with orbital invasion; from hydatid cysts of the orbit and dermoid cysts; from meningo-encephalocele; and, finally, from osteoma. The diagnosis from lacrymal tumour may be omitted here. Between mucocele and chronic empyema of the sinus there are the character of the nasal discharge (if any) and possible elevation of temperature in empyema. In subacute and acute empyema there is no difficulty. Benign tumours are sometimes only diagnosed by operation. Malignant tumours are rapid in course and involve other structures as muscles and nerves; the tumour is hard and adherent to the skin. Myxomata are apt to be associated with nasal polypi. Hydatid cysts are not accompanied by nasal discharge, and not attached to the orbital angle. Dermoids are congenital, so is meningo-encephalocele; the latter has well-known characteristics. ERNEST THOMSON.

(17) **Cabannes** relates the case of an infant in whom, despite the instillation of silver nitrate at the moment of birth, there

appeared towards the ninth day a purulent stomatitis, with redness of the tongue, then a purulent rhinitis, and a swelling of the left cheek, terminating in an abscess which broke in the gingivo-labial fold. Moreover, there was œdema of the eyelids and chemosis of the left eye. As regards the last point, there was no pus, but there had been a dacryocystitis consecutive to a gonococcal maxillary sinusitis. The infant died on the seventeenth day. At the autopsy it was seen that the sinus, still quite small, was filled with pus.

(18) **Patterson** (Colorado Springs) has a loosely-written article upon the dependence of some ocular conditions upon affections of the nasal accessory sinuses.

(19) After some criticism of Fish's views with regard to the nasal accessory sinuses as a cause of eye disease, **Johnston** expresses his own opinion, which is to the effect that "some obscure defects of vision and asthenopic symptoms are to be explained by pus in one or more of the sinuses." He explains the connection by assuming, as a working proposition, that the ocular disturbance is due to the toxæmic absorption from the pus in the affected cavity. In support of his views he relates a somewhat striking case which occurred in a man, aged 43 years, who had been subject for many years to a discharge from the right nostril. The patient complained of double or triple vision and of blurring of the right eye, the sight of which was 20/40. Spectacles had given no relief. Pus was recognised in the right antrum, a condition treated by removing the anterior end of the inferior turbinated body and making a permanent opening into the nasal wall with an electric trephine. The diseased cavity was then washed out twice a day with weak boric acid solution. After two months of this treatment, the patient lost all his ocular symptoms, while the vision of the right eye rose to normal. Johnston's case goes a long way towards proving the direct connection between a diseased antrum, on the one hand, and a functional eye disturbance, on the other.

SYDNEY STEPHENSON.

(20) **Delneuville's** (Spa) two cases differ considerably from one another. In the first, a man of 46 years, who suffered from double retrobulbar neuritis, was found to have sphenoidal sinusitis. Treatment of the latter cured the former, with vision=1. The second patient, a lad of 15 years, after an attack of influenza, suffered from naso-pharyngeal catarrh and ethmoidal sinusitis. This was treated, with the result that the nasal discharge ceased, but in a few days meningitis supervened; in the course of the latter, double optic neuritis (choked discs) and paralysis of the left external rectus were observed. Eventually the patient recovered completely, with vision=$\frac{5}{5}$. The author discusses the ætiology of the meningitis. Admitting the nasal origin, he rejects cerebro-spinal meningitis, because in the latter the onset is more grave than in this case, and because choked disc is rare

in that disease. Regarding tuberculous meningitis, there was in this case no history of tuberculosis, there were no choroidal tubercles, and the case ended favourably; all facts tending to negative tuberculosis. As to syphilis, although the successful treatment depended on mercury, this is no proof of syphilitic disease in a case such as this where mercury is the recognised remedy. On the whole, and in the absence of assistance from lumbar puncture, an operation which the author regrets was not performed, Delneuville leans to a diagnosis of serous meningitis of nasal origin. ERNEST THOMSON.

(21) **van den Wildenberg's** case occurred in a baby of two weeks, which three days after birth, presented a swelling at the internal and inferior border of the orbit. This was soon followed by marked exophthalmos, with the formation of a fistula at this level, purulent discharge from the nostril and from two other fistulæ, one at the level of the canine fossa and the other in the bony palate. In order to avoid the destruction of the dental follicles, the author respected the anterior surface of the maxilla. He made an incision along the inner and lower border of the orbit, and by raising the periosteum, exposed the outlines of several ethmoidal cells and removed several small sequestræ, and, finally, he made an opening into the nose. Later, after the expulsion during irrigations of the sinus of two enamel organs, he opened the anterior wall and curetted the cavity. Cure followed. The case was one of congenital syphilitic necrosis of the maxilla and of the ethmoid. R.

(22) **Langworthy** (Dubuque, Iowa) has a well-illustrated communication dealing with the frontal sinus. It may be divided into two parts: (1) the value of X-rays as a means of diagnosis in sinus disease; and (2) a description (with plates) of the operation devised by Killian, of Freiberg, in Breisgau, for the radical cure of such a condition. As to the first point, in order to detect pus in the ethmoid or frontal sinus, Langworthy recommends that three plates should be taken, namely, one antero-posterior and two lateral. The first-named, which is the most difficult to procure, is the most valuable, inasmuch as it allows one sinus to be compared ("matched up," in the author's phraseology) with the other. On the other hand, the lateral plates cannot safely be compared, since the two sides of the head are seldom alike. The value of the lateral views, however, lies in the fact that they are capable of yielding information with regard to the size and height of the frontal sinus. Radiograms have considerable diagnostic value in affections of the ethmoidal and frontal sinuses, but owing to technical difficulties, they are of much less service in sphenoidal and maxillary disease. The value of this method of diagnosis has certainly not been over-estimated. But it is advisable, in order to yield the best results, that the X-ray plate should be interpreted by an expert. For details regarding the Killian operation, the original must be consulted. SYDNEY STEPHENSON.

(23) In abstract, the two cases of frontal sinusitis reported by **de Britto** (Brazil) are as follows:—

Case No. 1.—A girl, 15 years of age, suffered from coryza as a sequel of influenza, and a few days before she consulted de Britto developed pain in the left fronto-orbital region, together with swelling and redness of the left upper eyelid. Upon examination (*see* Fig. 1), the left eye, almost completely hidden by the tumefied upper lid, was pushed forwards, downwards, and outwards. Pressure was intolerably painful when exercised upon a spot on the upper-inner wall of the orbit, two centimetres from the orbital margin. Pus was found in the left nostril. T. 37.2°C. A diagnosis was made of acute frontal sinusitis, with orbital complications. Operation was arranged for the following day, and meanwhile an injection was made (author omits to state into what part of the body) of four centigrammes of mercury biniodide in aqueous solution. When the patient was placed on the operating table it was noticed that a change for the better had taken place in the condition of the orbit. The idea of intervention was accordingly abandoned, and the mercury injections were continued every other day. Fig. 2 was taken nine days later, when recovery was complete.

Fig. 1. Fig. 2.

de Britto concludes that the symptoms in the foregoing case were due to syphilis, on the ground that cure followed the employment of injections of biniodide of mercury. Further, he surmises that the primary lesion lay in the osseous walls of the sinus.

Case No. 2.—A man of 30 years, who had suffered from constipation for five years, was seen on September 1st, 1906. In the preceding January his right eye had begun to water, and in April this was followed by a lacrymal abscess, which was allowed to break of its own accord. A fistula persisted until the month of June. As a matter of experience, the patient found that pressure with his finger over the lacrymal sac caused pus to escape from the corresponding nostril. The latter,

however, became more or less blocked up, so that he could breathe through it only with difficulty. Shortly after the appearance of the lacrymal abscess, the patient was seized with buzzing in the ears, dulness of hearing, and a painful swelling in front of the right ear. *On admission.*—A soft, painless swelling, the size of a small nut, present in the region of one lacrymal sac. Its contents could be caused to escape by pressure by the nose. Mucous membrane of right nasal fossa hyperæmic, and inferior and middle turbinate bones much increased in size. Pus and bare bone in middle meatus. Patient almost completely deaf. Right tympanic membrane hyperæmic, and left cloudy, with luminous triangle effaced. Teeth in upper jaw carious. Examination negative as regards syphilis. The patient was subjected to injections of mercury biniodide and to nasal irrigation with a 4 per cent. solution of boricine twice a day. Considerable improvement followed these means, but on September 16th, a prominent portion of the lacrymal bone could be distinctly felt with the finger. de Britto therefore curetted the middle meatus of the nose, and thus removed polypi, along with osseous particles. By the end of October, de Britto had made up his mind that he had to deal with a chronic ethmoiditis, and so urged a radical operation upon the patient. When the parts were exposed, a perforation, 8mm. to 10mm. in diameter, through which a soft mass protruded, was found immediately behind the os unguis. The fungosities were scraped away from both the anterior and the posterior ethmoidal cells, so that the ethmoid was transformed into a single cavity, communicating directly with the cellular tissue of the orbit, which was healthy. The cavity was drained by the nose, and the external wound completely closed. On November 7th, the sutures were removed, and the drain removed from the nose. On the 19th November the patient left hospital cured.

This case also is considered by de Britto to have originated in syphilis, a disease which he believes to play a more considerable part than is usually assigned to it in the ætiology of sinusitis.

SYDNEY STEPHENSON.

(24) **Bruckner** discusses the results of rhinological examination of about 250 eye patients, comprising: (1) acute and chronic dacryocystitis, (2) chronic conjunctivitis, and (3) scrofulous and some other affections. The most striking result of these investigations is the frequency with which atrophic conditions of the nose were found. Among 55 cases of dacryocystitis, 52 of which were chronic, atrophic rhinitis was noted in 59.1 per cent., hypertrophic rhinitis in 10.9 per cent., and deviated septum in 10.9 per cent. The hypertrophic rhinitis always affected the lower turbinates and was generally bilateral, the deviation of the septum was always on the side of the affected lacrimal sac. Among 90 cases of chronic conjunctivitis, atrophic rhinitis was observed in 56.7 per cent. In this connection the author points out that it is necessary to be cautious in drawing any conclusions from these statistics as to the importance of atrophic rhinitis as a cause of conjunctivitis and dacryocystitis, for it is not yet known what proportion of patients suffering from this form of rhinitis are not affected with any disease of the conjunctiva or lacrymal passages. Of 46 cases of eczematous conjunctivitis or keratitis, all showed some affection of the nose; 11 of 16 cases of unilateral frontal headache were associated with disease of the frontal sinuses. Lastly, it may be noted that the ethmoidal and sphenoidal sinuses were examined in ten cases of unilateral optic neuritis—in all with negative result.

PERCIVAL J. HAY.

(25) Statistics appear to show that next to antral disease the

ethmoidal cells or the sphenoidal sinuses are oftenest affected. Yet **Johnston** finds that during the past two years his frontal sinus cases almost equal in frequency antral cases, and that the ethmoidal cells and the sphenoidal sinuses follow in the order named. He accordingly believes that frontal sinusitis is more frequent than most authorities would have us think. The localisation of pain to the supra-orbital region has often led to frontal sinusitis being mistaken for neuralgia of the supra-orbital nerve. The author, indeed, is inclined to think that practically all "influenzal neuralgias" of the nerve named are, in truth, examples of inflammation of the lining membrane of the frontal sinus. In cases of so-called asthenopia (not relieved by glasses) it is important to ascertain whether pressure on the walls of the frontal sinus gives rise to pain, for in such cases the eye symptoms may sometimes be relieved by probing the sinuses, with or without removal of the anterior end of the middle turbinate bone. The pain is apt to be of a recurrent paroxysmal type. Another important sign of frontal sinusitis is the presence of thick and ropy pus in the nose, but polypi are not present in uncomplicated cases. The middle turbinate bone is nearly always enlarged, and presents a peculiar, sodden appearance—the *Schleimhaut-Wulst* of the Germans. Trans-illumination as a means of diagnosis was disappointing in most of the author's cases. Taken in conjunction with other signs and symptoms, as he remarks, the method is of some value, but alone is of no value whatever. In four of the eighteen patients, of whom Johnston gives notes, external operation, according to the method of Coakley, was performed. The procedure in question does not disfigure the patient, and the only objection that can be urged against it is the length of time required for healing. Johnston believes, however (and his figures bear out the point), that most cases of frontal sinusitis can be relieved of pain by intra-nasal treatment. He speaks well of the Ingals method of intra-nasal operation, but points to the difficulty he has experienced of being certain that the probe really lies in the frontal sinus. SYDNEY STEPHENSON.

(26) In the course of an elaborate paper on mucocele of the accessory nasal sinuses, **Turner** (Edinburgh) points out that such cases naturally fall into two groups: first, those in which the chief clinical phenomena are associated with the orbital cavity; and, secondly, those in which the symptoms are mainly referable to the nasal cavity. To the first class belong affections of the frontal sinus and the anterior ethmoidal cell labyrinth situated in the lateral mass of the ethmoid bone; and Turner's remarks are confined to this particular group. Careful details are given of ten cases, namely, frontal sinusitis in seven and ethmoidal sinusitis in three. It is to be noted that in one patient the symptoms of ethmoidal sinusitis were observed at the age of twelve years, and in another at ten years of age.

1. **The orbital swelling.**—The first thing that leads the patient to suspect that anything is wrong, as a rule, is a swelling in the orbit, and a defect in sight may be associated with this sign. Inflammatory phenomena, however, are conspicuous by their absence, unless an acute pyogenic infection has taken place. Thus, the skin over the swelling is of normal appearance, and the swelling itself is usually free from pain or tenderness. The tumour, as a rule, is confined to the upper eyelid, although exceptionally it may involve the forehead and the root of the nose. It is slowly progressive, and varies in situation and in size. Its position will depend to some extent upon its dimensions but mainly on its origin from the frontal or ethmoidal sinus. At the same time, the difference in the situation of the frontal and the ethmoidal swelling may be too slight to be of any real differential diagnostic value. The extension of the ethmoidal cells in certain instances into the orbital plate of the frontal bone must weaken the diagnostic value of position. Indeed, "it is not always possible by external examination alone to arrive at a definite conclusion as to which sinus is affected; until the cavity has been opened and explored, the surgeon may remain in doubt." The consistence of the swelling varies somewhat in different cases. It is sometimes possible to define with the finger a gap in the bony wall of the sinus, and towards the periphery a thickened zone of osseous consistence may sometimes be felt, resembling to the touch an exostosis. 2. **Displacement of the Eyeball.**—Proptosis is not confined to frontal mucocele, but occurs, too, where the ethmoidal cells are affected. Notwithstanding the alteration in the position of the globe, it is noteworthy that the movements of the globe may show no alteration or a very slight alteration. 3. **Disturbance in Vision.**—Diplopia need not be present even when there is considerable proptosis. Of the ten cases reported by Turner in the present communication, seven were associated with an alteration in the position of the globe, yet in three only was diplopia complained of. The fundus, as a rule, does not show any pathological change. Some fulness of the retinal veins on the affected side was noted once in Turner's series by W. G. Sym. "The normal condition of the fundus in cases of proptosis due to distension of the air sinuses," Turner remarks, "is of assistance in diagnosis. In retro-bulbar tumours associated with exophthalmos there is implication of the optic nerve with alteration in the ophthalmoscopic appearances. Consequently, when there is some doubt as to the cause of the proptosis, the normal appearance of the fundus would be against the presence of a retro-bulbar tumour." 4. **Epiphora.**—A watery eye, it appears, may be an early symptom of sinusitis. Such cases have been reported by Gilbert, Hulke, and Compaired; and two of Turner's ten patients, one with a frontal and the other with an ethmoidal mucocele, suffered from early epiphora. The absence

of any abnormal nasal secretion is one of the characteristic features of the class of case under review. The intranasal appearances, when present, vary. In six of Turner's cases no abnormality was observed. Of the remaining four, in three there was a bulging of the outer wall of the middle meatus into the nasal cavity, while in the fourth a quantity of pus escaped upon removal of the large globular middle turbinated bone.

Ætiology.—Although cases are on record where an injury determined an affection of the sinuses, yet Turner's present series includes no such case. The author believes that catarrh causes chronic inflammatory changes in the sinuses, in consequence of which the ostium becomes occluded. This leads to accumulation of the mucous contents of the sinus, and to gradual thinning and to eventual absorption of one or more of its osseous walls. Rarely, as in a case by Lambert Lack, a sinusitis may represent a congenital developmental anomaly.

Treatment.—Is a sinusitis to be attacked through the nasal cavity or through an external incision? The former route should be adopted, so Turner tells us, only in the event of the swelling showing itself in the nasal cavity, and enough bone should then be taken away to ensure permanence of the drainage. One of Turner's cases treated in this way was satisfactory, since no reaccumulation had taken place after an interval of four years. In most cases, however, an external operation is to be preferred. Here we may open the sinus and simply obliterate the cavity, or else make a large communication with the nose. Of these alternatives, Turner prefers the second. He describes the operation as follows: an incision is made parallel to and beneath the eyebrow, and the upper lid is then detached and turned down. The contents of the mucocele are then removed, and any portion of the floor of the frontal sinus or of the outer wall of the ethmoidal labyrinth, not already absorbed, is taken away. The ostium of the sinus is sought for with a fine probe, and whether found or not, a large opening into the nose is made by means of burrs, and a rubber drainage tube is passed through the opening thus made. The sinus is packed with gauze, a bit of which is brought out through the inner end of the incision, which is then sutured with the exception of the drainage end. The gauze is removed at the end of four or five days, and if the nasal tube is found to be draining satisfactorily, the skin incision is allowed to close in a week or ten days. The drainage tube, however, should be kept in for at least six weeks after operation.

SYDNEY STEPHENSON.

(27) There are cases of sinus mischief the most marked symptoms of which are ocular, although the underlying condition is nasal. **Posey** (Philadelphia) in the course of a thoughtful communication, raises the question as to which speciality such cases belong. The ideal person is manifestly one who combines both ophthalmology and rhinology in his

practice, but nowadays such an association is uncommon, and will doubtless become more so in the future. As matters stand, the modern rhinologist does not hesitate to include the orbit within his sphere of usefulness, and to lay bare important structures and to make dissections which often impair the safety of the eyeball and of the optic nerve. For this inroad upon his domain the ophthalmic surgeon has only himself to blame, since, as a rule, "he has been entirely negligent in his appreciation of the fact that there are such things as sinuses, and that there are structures upon the other side of the walls of the orbit of which he should be better informed. For beyond the recognition of the fact that nearly all abscesses of the orbit are secondary to sinus infection, until very recently ophthalmologists were ignorant of many of the symptoms which sinusitis may evoke in their own speciality." On these grounds Posey urges upon ophthalmologists the desirability of a more intimate knowledge of the anatomy and affections of the sinuses, and further insists that when there is a necessity for orbital incisions and dissections in the treatment of diseases of the sinuses, the operations shall be done by ophthalmic surgeons, or, at least, in their presence and with their counsel. On the other hand, the ophthalmologist should submit all cases in which he suspects that the sinuses may be at fault to rhinological examination, and when intra-nasal treatment seems likely to be useful, should transfer them to a colleague specially skilled in that department of surgery. Posey then briefly describes the various plans practised for the external opening of sinuses—as, for example, those of Nebinger-Praun, Ogsten-Luc, Kuhnt, Jansen, Ridell, Killian, and Coakley. X-rays and transillumination should be employed in the diagnosis of obscure cases. The author relates a case in which the lymph passage of the retinal vessels in both eyes, but more especially of those on the side opposite to the nasal lesion, was choked in consequence of congestion caused by an ethmoiditis. The diagnosis of mucocele should be understood by every ophthalmic surgeon, since these are the cases that commonly fall under his notice. Finally, Posey gives details of an instance of ethmoidal disease fatal from meningeal complications. The patient, two years before death, had attended Wills' Eye Hospital, Philadelphia, with symptoms that were thought to indicate antral and ethmoidal disease, but she declined the operation then suggested. Posey's point is, had the sinuses been opened as originally suggested at Wills' Hospital by himself, it is fair to suppose that a fatal issue might have been avoided. Posey concludes a suggestive communication with the following paragraph:—"The position of the ophthalmologist in the treatment of sinusitis is threefold—that of diagnostician, consultant, and surgeon. It behoves us, therefore, to acquaint ourselves well with this field, and to develop its ophthalmological phase to a degree commensurate at least with its rhinological." SYDNEY STEPHENSON.

(28) The case of **Casali** (Florence), which was of traumatic origin, appears to show the possibility of a mucocele being formed in one part only of a multiple frontal sinus. Several cases, described as cysts of the frontal sinus and not accompanied by microscopic examination of the wall of the cyst, might just as well have been cases of frontal mucocele of the unusual loculated form. A. ANTONELLI.

(29) **Cunningham** relates the case of a man, 50 years, who had suffered from two attacks of transitory diplopia, accompanied by fœtid discharge from the left nostril and giddiness and pain in the temple and head. On examination, slight prominence of the left eye, diplopia, slight paresis of the left external rectus, papillitis, and V. = 6/9. Visual fields on both sides, but more so on the left side, somewhat contracted for white and for red: no central scotoma. Pus in left nostril, which was more or less occluded by polypi, which were removed. A month later, the sphenoidal sinus was investigated, and pus found in the region of its ostium. Douchings of the sinus with boric lotion were carried out by means of a canula, introduced without difficulty. Three weeks later, the diplopia had disappeared, and the headaches had occurred less frequently and were less severe. The exophthalmos and the nasal discharge also were better. The sight was 6/9. The temporal edge of the optic disc had cleared. The retinal veins were normal, but the retinal arteries were somewhat narrower than usual. Improvement appeared to be directly dependent upon the douching of the sinus. It should be added that there was a family history of tuberculosis. Syphilis was denied by the patient. After discussing the explanation of the symptoms in the foregoing case, Cunningham proceeds to describe the development, anatomy, and the more important relationships of the sphenoidal sinus. The surgical bearing of these points is described, but for details the original communication must be consulted. SYDNEY STEPHENSON.

(30) **Griffin** justly observes that "although the symptomatology of pathologic conditions of the nose and accessory cavities has long been appreciated, more or less, by workers in this field of activity, not until recent years has the ophthalmologist and rhinologist alike recognised the fact that many ocular symptoms, which formerly were regarded, and unsuccessfully treated, as local disorders of the eyes, are frequently produced by inflammatory conditions within the nasal passages or accessory sinuses."

"Not only may the symptoms of refractive defects, muscular imbalances, conjunctivitis, glaucoma, etc., be somewhat simulated, but active distinctive lesions, such as neuritis, retinitis, choroiditis, iritis, and keratitis, may result from an infective process in an adjacent ethmoiditis or gingivitis. "Indeed, so often" (he tells us) "have these conditions been encountered in my practice . . .

that I now regard an ocular examination incomplete which does not include an inspection of the nose, and its accessory sinuses." He believes that "while this procedure may, in a majority of instances, seem useless, its routine application will frequently reveal an otherwise unsuspected etiologic or concurrent condition which must be corrected before an improvement in ocular symptoms can be expected." CHARLES A. OLIVER.

(31) A remarkable case is reported by **Dunn,** of Richmond Va. A male patient, 23 years of age, presented when he was first seen the appearance depicted in the accompanying figure (1). Four years before, he had been attacked by a severe pain behind his right eye, for the relief of which he was kept under the influence of morphine for several days, at the end of which time a sudden profuse discharge from the right side of his nose brought permanent relief. During the next year the forehead began to swell and this has gradually increased until the swelling has reached its present dimensions. The nasal cavities were unaffected. The V. was normal. A radiograph (*see* figure 2) showed that the mischief, whatever its precise nature, was confined to the frontal sinuses. An exploratory incision was made over the most prominent part of the protrusion, and the external bony plate of the sinus found to be not much thicker than a man's thumb-nail. Immediately beneath the bone was a greyish-white membrane, which on pressure burst much as might a thin, dried bladder filled with air. The walls of the sinus were dry, of a dead-white colour, and as hard as ivory. So far as could be made out, the bone was either bare or covered by a very thin, greyish-white membrane, which did not bleed as it was scraped away, except in a few spots. Both frontal sinuses were alike in this respect. The naso-frontal ducts were patent. Dunn explains his case by assuming that thinning and distension of the osseous walls had been subsequent to atrophy of the mucous membrane. The explanation, however, seems inadequate to account for the conditions as described by the author.

SYDNEY STEPHENSON.

(32) **Arnold Knapp's** patient, a woman, 19 years of age, recovered normal sight in her right eye some weeks after pus had been evacuated by resection of the anterior half of the right middle turbinated bone and by opening the posterior ethmoidal cells. Before operation, V. was $\frac{20}{70}$, in consequence of a pronounced neuro-retinitis of the right eye. In view of Onodi's researches on the relationship between the optic foramen and the posterior ethmoidal cells, it is of interest to note that Knapp's patient presented a relative central scotoma for white and colours of 5°. In these cases a central scotoma seems to be always present—provided the eyes be examined early enough. In other words, the lesion of the optic nerve must be classed in the retro-bulbar group of cases. SYDNEY STEPHENSON.

(33) **Birch-Hirschfeld's** researches into the relations between

TO ILLUSTRATE DUNN'S CASE.

Fig. 1.

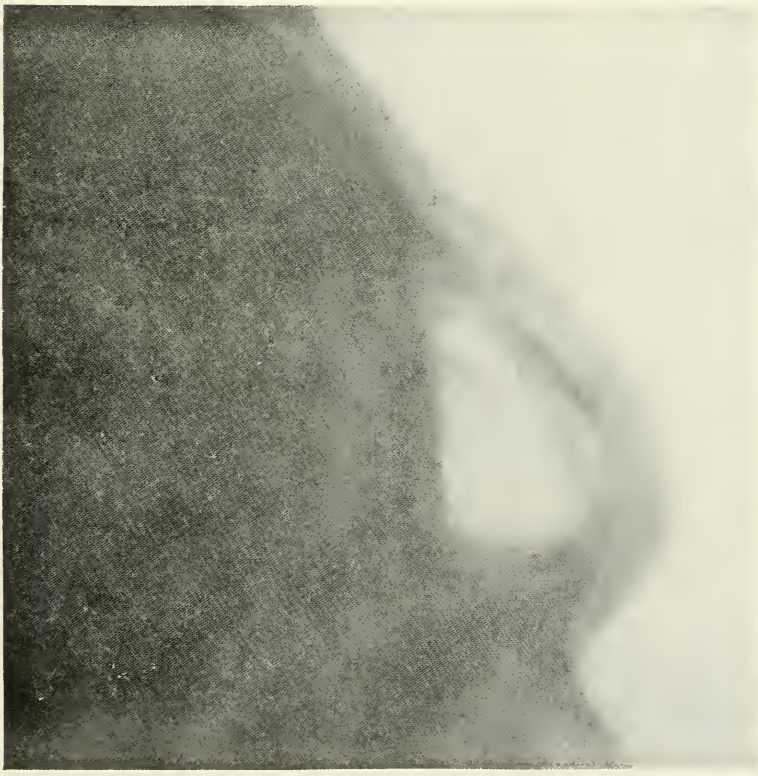

Fig. 2.

orbital and nasal affections are partly statistical. It was found that of 684 cases of orbital inflammations nearly 60 per cent. were secondary to suppuration in one or more of the nasal sinuses. Of the latter the frontal sinus was most frequently affected (29·8 per cent.), then followed the maxillary (21·8 per cent.), ethmoidal (20·5 per cent), and sphenoidal sinus (6·1 per cent.). In 14·7 per cent. several cavities were involved simultaneously. The process may spread from the nasal sinus to the orbit by way of connecting veins, and thus cause a thrombophlebitis and phlegmonous inflammation of the orbital tissue. In other cases a circumscribed abscess forms, which may at first be subperiosteal. The signs and symptoms and the risk to sight and to life in orbital inflammation are described by the author. But of special interest are the visual disturbances in affections of the sphenoidal sinus or posterior ethmoidal cells. They consist in a unilateral central relative or absolute scotoma for colours which sets in and progresses rapidly. Apart from orbital pain, this scotoma may be the sole manifestation of disease of the deeper cavities. As to treatment, Birch-Hirschfeld advises not to perform deep incisions with a narrow-bladed knife, but to lay open the orbital periosteum freely, and to separate it from the bone extensively with a blunt instrument; the cleansing out of the nasal sinus should be left to the rhinologists. C. MARKUS.

(34) The maxillary sinus, although of insignificant dimensions at birth, may be the seat of inflammation propagated from the nasal cavities. To the cases of this sort reported by Fano, Dujardin, Moure, Greidenberg, Douglas, Castex, and Weissman and Fiocre, **Beauvois** (Paris) adds another, as under:

A healthy baby, aged 14 days, awoke one morning with marked exophthalmos of the left eye. There had been no premonitory symptoms. The conjunctiva was slightly inflamed, but there was no secretion. Movements of globe unimpaired. The skin of the lower lid and of the infra-orbital region was somewhat swollen and reddened. The child "took" well, slept well, and seemed to be in his ordinary state of health. The mouth and nose showed no obvious changes. There had been no injury at birth. After the condition had lasted with little change for five days, a mass of pus, containing micrococci, pneumococci, and clubbed bacilli, was expelled from the left nostril. A rhinologist was then asked to examine the patient, and the report was—maxillary sinusitis. The treatment included cleansing the nose with boric lotion, followed by nasal inhalations of menthol. Pus in abundance continued to escape from the left nostril, and by the end of the third day, the exophthalmos had notably diminished. Eleven days after the illness began, symptoms had almost wholly subsided, and four days later, the nasal discharge had ceased. When last seen by Beauvois, 28 days after the trouble began, cure was complete, although a convergent squint was present.

SYDNEY STEPHENSON.

(35) **Reber** (Philadelphia) reports two cases of orbital suppuration due to nasal disease. 1. A child's left eye became inflamed and prominent, and general symptoms, as lassitude, drowsiness, and loss of weight, came on. After symptoms had lasted for several months, about two ounces of greenish, foul-smelling pus were evacuated by introducing a narrow blade along the inner wall of the orbit. Improvement was marked, and the eye retained normal vision. A nasal examination made soon after the operation revealed the existence in the left nasal fossa of a "swollen white bean." The foreign body, which occluded the fossa, had set up rhinitis. The inflammation had probably spread to the ethmoid, and, in turn, had involved the orbit, possibly passing through the os planum or lamina papyracea by means of a congenital deficiency in the osseous wall. 2. Reber's second case occurred in a trained nurse, who developed acute frontal sinusitis about two weeks after an attack of influenza. After an exacerbation, pus, which contained streptococci, was liberated from the orbit by deep incision. Recovery uneventful. SYDNEY STEPHENSON.

(36) **Syme** (Glasgow) thinks that the intra-nasal treatment of frontal sinus disease should be given a fair trial before resorting to more radical measures. Such treatment may include the local application of adrenalin (1 : 20,000), the correction of a deflected septum or the removal of a spur, the extirpation of polypi, and, especially, the removal of the anterior end of the middle turbinal. A careful description is given of Killian's operation, the deformity subsequent to which may be remedied by the injection of paraffin. The ocular complications of this operation include orbital cellulitis, temporary paralysis of the superior oblique from interference with its pulley and, it may be, of other external ocular muscles. Again, in sphenoidal disease, irrigation should be tried before the sinus is treated surgically. Syme himself attacks the sinus by removing the anterior wall through the anterior nares, and for this purpose employs a long-handled sharp spoon. This instrument he inserts into the groove where the ostium is situated and where the bone is thinnest, and makes a breach by imparting a screwing movement to the spoon. After that, removal of the whole wall is a simple matter, except at the lowest part, where a chisel may sometimes be required. As a preliminary measure, removal of the middle turbinal and possibly of the posterior ethmoidal cells will be necessary. The sphenoidal sinus is first curetted, and then swabbed out with a strong solution of zinc chloride.

SYDNEY STEPHENSON.

VII.—DISEASES OF THE ORBIT.

(1) Barck, C.—A rare path of infection of an orbital abscess. *Archives of Ophthalmology*, XXXV, 6, p. 531.

(2) Knapp, Arnold.—Sudden blindness following suppurative conditions about the eyeball. *Archives of Ophthalmology*, Vol. XXXV, No. 6, 1906.

(3) Coburn, Edward H.—Pyemia, orbital cellulitis, and death following the use of mesotan. *Annals of Ophthalmology*, April, 1906.

(4) Parker, Frank C.—Bilateral gumma of the orbits in a child eight years of age. *Annals of Ophthalmology*, April, 1906.

(5) Tooke, Fred T.—Hæmorrhages within the orbit, with report of a case of spontaneous origin. *Ophthalmic Record*, April, 1907.

(6) Hansell, Howard F. — Two fatal cases of orbital cellulitis. *Annals of Ophthalmology*, April, 1907.

(7) Peck, W. H.—Unilateral exophthalmos in a new-born infant. *Annals of Ophthalmology*, July, 1907.

(8) Lauber, H.—A case of cicatricial fixation of the eyes after syphilitic necrosis of the nasal wall of the orbit. (Ein Fall von Narbenfixation der Augen nach luetischer Nekrose der nasalen Orbitalwand.) *Zeitschrift f. Augenheilkunde*, XVIII, 1907, p. 41.

(1) **Barck** (St. Louis) reports the case of a lad, 8 years of age, who was struck on the right temple by a stone flung by another boy. On the fourth day after the injury, the patient was comatose and delirious, and the temperature was 104°F. Seen by Barck on the following day, there was a 2mm. incised wound on the temple with ?fracture of the underlying bone, enormous oedema of the right upper eyelid, and considerable exophthalmos. The patient was semi-comatose. Temperature, 104.5°F. *Provisional diagnosis*: orbital abscess. An attempt to evacuate pus from the orbit met with no immediate success. But on the following day the dressings were saturated with pus and the exophthalmos was found to have diminished, thereby showing that the pus had escaped from the orbit. Local symptoms soon improved, although for some time the temperature ranged from 102°F. to 103.3°F., and the lad became weak and lost flesh. These symptoms eventually subsided, and the lad was discharged from hospital twenty-six days after the accident. About a month later, however, he developed symptoms which it was thought might be those of cerebro-spinal meningitis, but these soon disappeared, leaving behind them paresis of each

external rectus muscle. The latter yielded to the internal administration of potassium iodide. During the operation the supposed fracture of bone in the temporal region, as indicated by the roughness felt with a probe introduced through the original wound, was found to be due to the edge of a large emissary foramen. This fact induced Barck to examine a number of skulls, when he found that an emissarium was normally present at the spot in question, although its existence is not as much as mentioned in the current text-books of anatomy. It is situated 15mm. to 25mm. above the outer edge of the supra-orbital margin. The canal leads down into the diploë of the skull, and apparently enters the lacrymal fossa of the orbit as a number of small foramina. These anatomical considerations lead Barck to conjecture that infection reached the diploë through the emissarium, and thence found its way into the orbital tissues through the foramina in the upper-outer wall of the orbit.

SYDNEY STEPHENSON.

(2) **A. Knapp** (New York) reports three cases of sudden blindness following orbital suppuration. In such cases the ophthalmosopic picture is that of embolism of the central artery of the retina, with consecutive optic atrophy and obliteration of the arteries. The ophthalmoscopic picture agrees with that observed in facial erysipelas with antecedent exophthalmos. Knapp's first case, in a woman of 50 years, followed Kuhnt's operation for empyema of the frontal sinus. On the second day after operation, it was found that the patient was blind in the eye corresponding to the affected sinus. Ophthalmoscopic examination revealed an embolic process. The disc eventually became atrophic, and the woman remained blind. The second case, a girl of 16 years, suffered from periostitis after filling of decayed teeth. Five days later, an abscess opened in front of a canine tooth. The patient then found that she was unable to see with one eye. When examined three weeks after the teeth had been "stopped," the ophthalmoscope showed a white optic papilla, with normal retinal vessels. In the third case, an orbital abscess developed after a penetrating wound by a lead pencil. The abscess was evacuated surgically. The optic disc was white and the retinal arteries were very small. V. = O. SYDNEY STEPHENSON.

(4) **Parker** (Morristown, Pa.) observed in a girl, 8 years of age, gummata of the orbits. The symptoms had existed for two months before the child was brought for advice. The upper lids were greatly swollen, slightly reddened, and tense. Marked limitation in the upward movement of the eyes. A hard, immovable mass could be felt to lie beneath each superior orbital margin and to extend from one end of the lid to the other. At the upper-inner angle of the orbit it was somewhat more prominent, and resembled the hard, bony protrusion from disease of the frontal sinus. A piece of growth removed for

purposes of diagnosis (which was altogether obscure clinically) was reported as gummatous. Prior to this pathological diagnosis, the case had been treated, apparently without particular benefit, by X-rays and mercury ointment. Similar means were again adopted, but no change for the better had taken place in a fortnight. Potassium iodide was accordingly added to the armamentarium, and after some reaction, probably due to the X-rays, the proptosis disappeared. Some fifteen months after the girl was first seen, no trace of the orbital growths could be found, and the patient was practically cured. Parker ascribes some of the improvement to the influence of the X-rays.

SYDNEY STEPHENSON.

(5) **Tooke** (Montreal) reports a case of spontaneous hæmorrhage into the orbit in a woman of 42 years, who had for long suffered from varicose veins, from which subcutaneous hæmorrhage occurred periodically. On one occasion, for instance, there had been an ecchymotic area on her thigh as large as a dinner plate. The patient was awakened by an excruciating pain over the left eyebrow, and it was then found that the brow and the left side of the face were much swollen and that the eyeball protruded considerably. The lids were suffused with blood. Sight was completely lost. During the next few weeks, symptoms subsided and vision gradually returned. Treatment included potassium iodide internally and adrenalin chloride locally. Tooke explains the case on the assumption that a long-standing varix of the superior branch of the ophthalmic vein had ruptured spontaneously.

SYDNEY STEPHENSON.

(6) **Hansell** (Philadelphia) reports two fatal cases of orbital cellulitis, both in children. The first was in a baby of four months, whose condition on the third day of the disease is depicted in the figure. T. 103°F. Three deep incisions into the orbit failed to release pus. Two days later, the eye was still more prominent, and the right arm, from the elbow to the shoulder, was erysipelatous. The eye was enucleated, and a specimen of blood, obtained as it gushed from the severed vessels, was found to contain streptococci and diplococci. Erysipelas spread to the back; the temperature rose to over 105° F.; pneumonia developed; and the child died on the fourth day after the operation and the seventh day after the commencement of the illness. The accessory cavities (examined by D. Braden Kyle) reported healthy. Inspection of orbital cavity, after removal of the eye, revealed no abnormality of the osseous walls. Hansel's second case occurred in a lad of 13 years a couple of days after a blow upon the right eye by an icy snowball. Condition on admission serious, since, in addition to orbital cellulitis, the boy presented such disquieting symptoms as inability to walk unaided, vomiting, mental hebetude, and twitching of fingers. T. 103° F. The

orbit was opened from above by J. Chalmers Da Costa, and a moderate amount of pus released. Believing the anterior lobe of the cerebrum to be involved, the parietal bone was trephined,

and a little pus was discharged through an opening made in the dura mater. Patient died two days after operation and four days after the injury. SYDNEY STEPHENSON.

(7) A male infant, born without instrumental aid in less than three hours, presented exophthalmos of the right eye, "which had existed since shortly after its birth." The cornea became excoriated. The exophthalmos became more marked, but ultimately disappeared completely. **Peck** is "impressed with the possibility of the condition having been caused by vascular obstruction and remedied by the establishment of collateral circulation." SYDNEY STEPHENSON.

(8) **Lauber** (Vienna) narrates the case of a woman, aged 39 years, who was affected with syphilitic rhinitis and ozœna, diagnosed as such at two rhinological *kliniks*. There followed a gummatous osteoperiostitis, and two sequestra were removed. In consequence of the cicatricial contraction of the tissues, an epicanthus-like fold was produced on both sides of the root of the nose, and the eyeballs became fixed to the mesial wall of the orbits. The appearance thus produced resembled that of a convergent squint. The globes could be adducted, but abduction was impossible, even when surgical forceps were requisitioned for the purpose. SYDNEY STEPHENSON.

VIII.—INJURIES OF THE ORBIT.

(1) Poissonier, G.—Fractures of the orbit. (Les fractures de l'orbite.) *Gazette des Hôpitaux*, 30 septembre, 1905.

(2) Keiper, George F.—Tine of a steel fork thrust through the left upper eyelid, eyeball, and through the antrum of Highmore. Therein for fourteen years. Removal. No reaction. *Ophthalmic Record*, September, 1905.

(3) Baker, Charles H.—A case of foreign body in the orbit. *Ophthalmic Record*, May, 1906.

(4) Rhein, John H., and Risley, Samuel D.—Severe injury to the left orbital region, presenting paralysis of several cranial nerves. *American Medicine*, October, 1906.

(5) Fabrini, E.—A contribution to the list of cases of orbital foreign bodies. *Annali di Ottalmologia*, Vol. XXXVI (1907), fasc. 1 and 2, pp. 146 to 155.

(6) Ohm, J.—A case of unilateral Argyll Robertson pupil following oculomotor paralysis caused by wound in the orbit. (Ein Fall von einseitiger reflektorischer Pupillenstarre bei Vorhandensein der Konvergenz reaktion infolge von peripherer Okulomotorius-Lähmung nach Eindringen eines Eisensplitters in die Orbita.) *Centralbl. f. prak. Augenheilk.*, Juli, 1907.

(7) Böhn.—Injuries of the orbit. (Ueber Verletzungen der Orbita.) *Die Ophth. Klinik*, Okt. 20, 1907, p. 609.

(8) Zimmermann, W.—Gunshot-injury of the orbit, removal of the bullet, with preservation of sight, by Krönlein's operation. (Schussverletzung der Orbita, Entfernung der Kugel mit Erhaltung des Sehvermögens durch Krönleinsche Operation.) *Klin. Monatsbl. f. Augenheilkunde*, August-September, 1907.

(9) Wasjutinsky, A.—Contribution to traumatic paralysis of the ocular muscles. (Zur Kasuistik der traumatischen orbitalen Lähmungen der Augenmuskeln.) *Klin. Monatsbl. f. Augenheilkunde*, Dezember, 1907.

(1) In this elaborate and comprehensive paper, Poissonier has brought together the scattered literature on the subject of fractures of the orbit, under the headings of pathological anatomy, ætiology, pathogenesis, symptoms, complications, diagnosis, prognosis, and treatment. The article is so full of compressed information on all these headings, and is accompanied by such an elaborate bibliography, that it is hopeless to attempt an abstract. The bibliography alone extends to nearly three closely printed columns of the journal, and contains about 100 detailed references. ERNEST THOMSON.

(2) **Keiper's** case is interesting, on account of the size of the foreign body and the length of time of its retention. Eyesight was immediately destroyed at the time of the traumatism, but the existence of a foreign body was not suspected until the author determined its presence 14 years afterwards by a probe passed through a sinus which had made its appearance through the original wound of entrance some two years before.

The metallic mass encrusted in part with an undisturbed point showing that it had been imbedded in the "floor of the antrum of Highmore," was removed in its entirety by the aid of a pair of forceps passed through an enlarged opening.

C. A. Oliver.

(3) **Baker's** (Bay City, Mich.) patient was injured in the left eye by the bursting of a Winchester rifle, in which he was firing too great a charge of nitro-powder. The eyeball became atrophic, and the other eye showed signs of impending sympathetic mischief. Under these circumstances Baker proceeded to enucleate the injured organ. The scissors, introduced for the purpose of dividing the optic nerve, met on some metallic substance. Attempts to remove this foreign body with ordinary instruments having proved unavailing, a pair of gasfitters' pliers were requisitioned. "With these," writes Baker, "good hold could be had and a pull sufficient to have served for the extraction of a well-rooted molar tooth brought away the piece," which proved to be part of the extractor spring of the rifle, $1\frac{1}{4}$ inches long. The piece of metal, one end of which was sharp and provided with a barb resembling that of a fish-hook, had traversed the eyeball, and become fixed in the roof of the orbit. Healing uneventful.

Sydney Stephenson.

(4) **Rhein and Risley** relate the case of a woman of 50 years who was struck on the face, arm, and chest by a hawser which snapped under strain. Some of the resulting injuries were permanent, and nine months later, she was found to suffer from unilateral hemianopsia, with pallor of the disc, paralysis or paresis of the fourth, fifth, sixth, seventh, and part of the third nerve, and possibly paresis of the eighth nerve. The symptoms seemed to point to more than one lesion (especially as consensual light-reflex from the blind retina was present), namely, to an orbital and to an intracranial lesion. The exact diagnosis, however, remains speculative. Those who are interested in localization problems should consult the original. Ernest Thomson.

(5) A child of 12 years, after a fall, showed swelling, abscess, and fistula of the supero-nasal end of the left orbito-palpebral furrow. He had been operated upon by curettage of the bone without effect; the probe penetrated about 5 cm., and, eventually, when pushing it downwards and alongside the eyeball, a resistance was encountered, and there was considerable pain. Radical operation led to the extraction of a piece of wood a little over

4 cm. long, cylindrical in shape, and having a maximum diameter of 10 mm. and a minimum of 6 mm. The end was somewhat sharp. Normal course ; perfect recovery with intact eyeball. By shortly reviewing the literature of such cases, **Fabrini** shows that the tolerance of the orbit to more or less bulky foreign bodies varies with the age and constitution of the patient and with the character of the foreign body. Inorganic substances are much better tolerated than organic ; metals, and especially lead, readily become encysted. Bodies with a smooth surface and of small volume are better and longer tolerated than large objects and those with a rough surface. In a general way, the orbit shows a tolerance to foreign bodies, which is perhaps greater than that of any other cellular tissue in the body. This is explainable by the narrowness and rapid co-aptation of the wound of entrance (which tends to prevent secondary infection), by the moderate disturbance which a non-septic intra-orbital foreign body is capable of producing, by the absence or nearly so of eliminatory reaction, and, finally, by the immobility of the region. A. ANTONELLI.

(6) The clinical history of the case which **Ohm** discusses is shortly as follows—A healthy man, 19 years old, received a wound of the right eye by a piece of iron. On the following day there was found a wound, 4 mm. long, situated at the junction of the middle and inner thirds of the lower right lid, 3 mm. below the lid margin. The right upper lid hung low. The eye was proptosed, the lateral movements of the eyeball were completely abolished, and the vertical movements were diminished. The pupil was round, 8 mm. wide, and completely immobile ; accommodation was also paralysed. Down and in were seen small retinal hæmorrhages. V. = 1/15. Left eye normal. From the wound in the right lower lid was removed by magnet a piece of iron, 12 mm. × 9 mm. × 3 mm , and weighing 780 mg. The wound healed perfectly. The eyeball recovered its movements slowly, but the pupil began to get somewhat smaller only after six months had elapsed. V. = 5/5. Accommodation had returned, but the right pupil remained immobile to light, either directly or consensually, but reacted to convergence, becoming as small as the left. After such a reaction, it only reached its previous size in 4-5 minutes. The left pupil reacted to light, both directly and consensually. This condition has persisted up to the present (1 year). The causes of unilateral Argyll Robertson reaction have generally been considered to be central, but in this case the injury is obviously peripheral. The vision having recovered almost perfectly, the centripetal path is most likely not the one injured, especially bearing in mind the consensual reaction of the left eye. The case seems to require two independent centrifugal paths for the iris movements—one for the light-reflex movement and one for the convergence movement, and in this

case the former seems to have been permanently injured. These nerves would travel in the ciliary nerves, of which one or more may have been injured, and in this connection it is interesting to note that a segment of the upper portion of the cornea became less sensitive than the rest of the cornea. The ciliary nerve injured must have contained all the light-reflex fibres and none of the convergence fibres. A. LEVY.

(7) **Böhn** reports a case in which a slate-pencil, measuring 5cm., was removed from the right orbit of a young man, *æt.* 24. The pencil had laid embedded in the orbital tissues for 18 years without causing any irritation. Vision of the eye was $\frac{4}{5}$, without correction. A slight paresis of the sixth nerve could be detected. Some conjunctivitis was present, and granulations were noticed below the caruncle. These conditions did not yield to treatment, and as the patient remembered having fallen down some stairs with a pencil in his hand, an X-ray photograph was taken, and the pencil found in the orbit. PERCIVAL J. HAY.

(8) In **Zimmermann's** (Görlitz) case a bullet had entered the orbit near the centre of the lower orbital margin. The symptoms consisted in exophthalmos, œdema of the upper lid, sluggish reaction of the dilated pupil, and impairment of vision $\frac{5}{35}$. The eye could not be moved outwards, and only slightly upwards and downwards. The ophthalmoscope showed several small retinal hæmorrhages. There was, moreover, vomiting and brachycardia, suggestive of meningeal irritation. X-ray photographs showed the bullet far back in the orbit. It was found near the optic foramen by Krönlein's operation and extracted. The patient left the hospital with V. nearly $\frac{1}{2}$, and only slight impairment of the outward movement of the eye. C. MARKUS.

(9) A drunken soldier injured his right eye with an iron hook; when seen by **Wasjutinsky** (Warsaw) two days after, he was unable to tell exactly how the accident had happened. There was a wound of the ocular conjunctiva, $1\frac{1}{2}$ cm. above the cornea and $1\frac{1}{2}$ cm. long. The tendon of the superior rectus muscle was hanging out of the palpebral fissure. From an analysis of the double images it followed that also the superior oblique muscle was weakened or even paralysed. On lifting the upper lid, 2·4 cm. of the torn muscle, which had evidently suffered considerable stretching, were visible. The tendon, being partly necrotic, had to be removed; otherwise the muscle might have been advanced. Diplopia, of which the patient complained considerably at first, became gradually less disturbing.

C. MARKUS.

IX.—PULSATING EXOPHTHALMOS.

(1) Lewis, F. Park.—Pulsating exophthalmos — ligation of orbital artery—recovery. *Ophthalmic Record*, February, 1907.

(2) Spencer, Major C. G.—A case of arterio-venous aneurism of the orbit. *Lancet*, April 13th, 1907.

(3) Blanco.—Pulsating exophthalmos of the right orbit. Ligature of the common carotid. (Exoftalmos pulsatil de la orbita derecha. Ligadura de la carotida primitiva.) *Archivos de Oftalmologia Hispano-Americanos*, August, 1907.

(4) Beauvois.—The treatment of pulsating exophthalmos by the method of Lancereaux and Paulesco. (Traitement de l'exophtalmie pulsatile par la méthode Lancereaux-Paulesco.) *Recueil d'ophtalmologie*, juin, 1907, and *Bull. et Mém. de la Société Française d'ophtalmologie*, Vol. XXIV, 1907, p. 522.

(5) Cantonnet and Cerise. — Spontaneous arterio-venous aneurism of the orbit. (Anévrisme artério-veineux spontané de l'orbite.) *Soc. d'opht. de Paris*, 6 décembre, 1906, and *Revue générale d'ophtalmologie*, août, 1907.

(6) Moutinho, Mario.—Traumatic aneurism of the left orbit: ligature of the corresponding common carotid: noteworthy improvement (Anévrysme traumatique de l'orbite gauche : ligature de la carotide primitive correspondante: amélioration importante.) *Archives d'ophtalmologie*, août, 1907.

(7) Jack, Edward E.—A case of pulsating exophthalmos; ligature of the common carotid; death. *Trans. Amer. Ophthal. Society*, Vol. XI, Part II, 1907, p. 439.

(8) Mackay, George.—Traumatic arterio-venous aneurism of right orbit with pulsating exophthalmos. *Trans. Ophthal. Society U.K.*, XXVII (1907), p. 178.

(9) Pincus, Friedrich.—The spontaneous cure of traumatic pulsating exophthalmos. (Spontanheilung eines traumatischen pulsierenden Exophthalmus.) *Zeitschrift f. Augenheilkunde*, XVIII, 1907, p. 33.

(10) Gifford, H. — Pulsating exophthalmos treated by excision of a dilated orbital vein. *Ophthalmology*, October, 1907.

(1) A man of 26 years was rendered unconscious by a blow on the back of his head, an injury followed by protrusion of his left eye. Seen nearly a year later by Lewis, the patient's left eye was thrust forwards, downwards, and outwards, and a tense swelling was present in the upper lid, pulsating synchronously

with the heart-beat. Slight fulness of retinal vessels. V.=20/30. After a long and difficult dissection, under profound anæsthesia, the ophthalmic artery, which was curved upon itself and at its widest part had the diameter of a man's little finger, was ligated in several places, until at last the vessel was tied just within the orbital cavity. Result excellent. When seen three years after operation, both eyes apparently normal. V.=20/30. Disc of left eye somewhat pale. The interest in Lewis's case centres around the fact that although some portion of the aneurism extended beyond the orbit, yet a ligature placed within the orbit succeeded in controlling the symptoms, and that without removal of the eye. SYDNEY STEPHENSON.

(2) Three weeks after a blow in the right eye, **Spencer's** patient, a gunner, aged 23 years, began to be troubled with "buzzing noises" in the head, and when examined six weeks after the injury, a pulsating swelling, with thrill and murmur, was detected in the orbit. Despite compression of the common carotid and the administration of calcium chloride, the symptoms became more marked. The right common carotid was therefore ligated, and pulsation entirely disappeared on tightening the ligature, although a slight thrill could still be felt over the right eyebrow. The sutures were removed on the sixth day, the wound having healed, but a small prominent swelling still pulsated in the orbit. An incision was made through the upper lid, and the swelling, which proved to be a fusiform dilated vessel, was dissected out between the two ligatures. All pulsation and thrill disappeared at once, and four months after the carotid was tied, no symptoms remained except a slight fulness in the right orbit. ERNEST THOMSON.

(3) **Blanco's** case followed no injury, and was regarded at first as a neoplasm, the pulsation being easily overlooked. Cure followed ligature of the common carotid. HAROLD GRIMSDALE.

(4) **Beauvois** (Paris) gives a short account of the course, prognosis, and treatment of pulsating exophthalmos. He considers that ligature of one or both carotids is the only measure which has been followed by any degree of success. From the ophthalmic surgeon's point of view, this operation has the disadvantages of being uncertain in its results and of a serious nature, requiring prolonged attention in a hospital. It is, moreover, an operation which many ophthalmologists would rather entrust to a general surgeon.

Beauvois puts in a strong claim for the treatment by subcutaneous injection of gelatine, as instituted by Lancereaux and Paulesco. It is safe, efficacious, and easy of application. Gelatine introduced into the blood, either directly or indirectly (through subcutaneous tissue), renders the blood more coagulable, and thus favours the natural process of cure by the deposit of blood-clots in aneurisms. This clotting will occur only in places where the current of blood is slow and the vascular walls

irregular. The possibility of clotting elsewhere must be borne in mind, and a case of contraction of the pulmonary artery, and another of solid coagulation in the subclavian and left carotid, have been recorded. These accidents, however, Beauvois does not attribute to the use of the gelatine. The solution of gelatine employed is as follows :—white gelatine, 4—5 grammes ; Na Cl solution (0·7 %) 200 c.c. This solution must be carefully sterilised in an autoclave at a temperature of 115° to 120°, and should the solution become turbid or not solidify when cooled, it is rejected. and only clear solutions which solidify on cooling must be used, The solidified gelatine is placed in a flask with rubber stopper, through which one short and one long glass tube passes. The short tube is connected with a hand-pump, and the long tube, which passes nearly to the bottom of the flask, is connected by means of an india-rubber tube with a strong platinum-iridium needle of good calibre. The whole apparatus is carefully sterilised before use and the sterilised gelatine is dissolved by heating over a water bath at 37°. The injection is made into the subcutaneous cellular tissue, preferably of the buttock, and the quantity injected varies from 5 to 100 c.c. The injection should be done fairly quickly, and should occupy only about a quarter of an hour. There is little or no pain from the operation, and if the apparatus and patient are properly prepared, there should be no local suppuration or intense local or general reaction. There is occasionally a slight elevation of temperature after the injections ; and it is necessary, for various reasons, to keep the patient absolutely quiet after the injections. The effect of the injection may be noticeable within a few hours. The number of injections to be given will vary according to the effect produced, and average about twelve, although they may range from five to fifty. The duration of treatment varies according to the number of injections required. They should not be repeated oftener than every six or eight days. The case recorded by Lebon took three months, while that of Beauvois and of Santos Fernandez respectively occupied six months. J. JAMESON EVANS.

(5) **Cantonnet** and **Cerise** report the case of a spontaneous arterio-venous aneurism of the orbit in a woman of 80 years, who was affected with arterio-sclerosis. The patient succumbed almost suddenly some weeks after the beginning of the ocular symptoms, apparently from a lesion of the coronary arteries.
PÉCHIN.

(6) **Moutinho** (Lisbon) relates the case of a man, 34 years of age, who, after a violent blow on the left side of the head, developed pulsating exophthalmos of the left eye, which had been blinded years before by the penetration of a fragment of metal. The left common carotid artery was tied in two places. Pulsation and bruit ceased as soon as the ligatures were tied. When the patient left the hospital one month after the operation, there was no pulsation, and the bruit was much less marked,

as was also the exophthalmos. Condition materially the same when the man was seen eight months later.

SYDNEY STEPHENSON.

(7) Two days after a slight injury (blow on right temple) Jack's patient, a woman 53 years of age, began to vomit at frequent intervals, became dizzy, and developed pulsating exophthalmos on the injured side. The right common carotid was tied by H. H. Germain, with the immediate result of stopping the pulsation and bruit that had been present before operation. But the general condition grew worse, and the patient (affected with cardio-vascular disease) died about one month after operation. On lateral cross-section through the middle of the right cavernous sinus, there was found a large sacculated aneurism, which communicated anteriorly with the carotid artery by means of an opening, 3·25 mm. in diameter. Left cavernous sinus replaced by a single small vein in continuity with the ophthalmic vein. The histological examination was carried out by Frederick H. Verhoeff. Both carotid arteries showed the changes characteristic of advanced arterio-sclerosis. The right optic nerve manifested atrophic changes, confined almost exclusively to the papillo-macular bundle, and resulting from compression of the nerve by the sclerosed carotid artery. Œdema of right cerebral hemisphere. The condition, then, was one of aneurism of right internal carotid artery, with recent perforation into the cavernous sinus.

Commenting upon the above case, Jack states that the present is the thirty-third case in which an autopsy has been made. It is the seventh in which a rupture of the carotid into the cavernous sinus (arterio-venous aneurism) has been shown to exist. He believes that in his patient the aneurism of the carotid had been present long before the rupture into the sinus, and that the latter was induced by the injury to the temple, slight though that appears to have been. In about 125 of the 260 reported cases, the common carotid has been tied. There have been at least ten cases in which both carotids were ligated. Some 21 spontaneous recoveries have been mentioned in the literature. Sattler, Schwalbach, Dollinger, Woodward, and Golowin have reported cases cured by ligation and resection of the superior ophthalmic vein, even although in some of these cases ligature of the carotid had failed (Schwalbach, Dollinger, Woodward, and Golowin). The cure appears to result from thrombosis spreading backwards from the point where the ligature has been applied to the vein. Jack recommends that this procedure be adopted before the carotid is tied—certainly before tying the second one in the event of failure with the first. Jack mentions, finally, another case of pulsating exophthalmos in a male, aged 54 years, after a bicycle accident. The cornea ulcerated and sight was lost, but the exophthalmos was cured after deep incisions had been made into the orbital tissues above

and below through the lids. Here, too, the good result as regards the exophthalmos was probably due to a spreading thrombosis. SYDNEY STEPHENSON.

(8) A man of 31 years was thrown on his head, and remained unconscious for about eight hours. On recovery, pain in head and whistling noise in both ears. Right eye found to be prominent on the fifth day after the accident. When seen by **Mackay** some seven months later, there was pulsating exophthalmos of the right eye, with V. = fingers at 2·5 metres. The left fundus showed some cloudiness of the optic disc, together with slight congestion of the retinal veins. V. = fingers at 4 metres. Patient treated by potassium iodide, rest, and local compression. Improvement; return to work. About 11 months later, however, re-admitted on account of recurrence. Suggestions as to surgical treatment invited. ERNEST THOMSON.

(9) A workman, aged 31 years, fell from a height of fourteen metres and struck himself first on the right shoulder and then rebounded on to the left side of his head. He sustained a fracture of the base of the skull. After a period of unconsciousness, he found that his right eye was blind. There were also evidences of injury to the right abducens nerve and to the sympathetic of the same side. In the second month, pulsating exophthalmos of the other (left) eye developed. It was then found that compression of the left carotid artery had no effect upon the symptoms, which were more or less controlled when pressure was brought to bear upon the right carotid. The case was treated, therefore, by compression on the right carotid artery. When discharged from hospital rather less than three months after the accident, patient was instructed to keep up compression. To shorten rather a long story, in 1905 it was found that the symptoms had practically disappeared as regarded the exophthalmos—that is to say, after they had lasted for nearly ten years. **Pincus** quotes analogous cases by Bronner and by Frost. SYDNEY STEPHENSON.

(10) **Gifford** (Omaha, Neb.) reports one of these instructive cases where traumatic pulsating exophthalmos in a young man was cured by excision of a dilated orbital vein after ligation of the external and common carotid artery had failed. The credit of having suggested that procedure lies, it seems, with Szimanosky (1897), and the first surgeon to practise it was Lasarew in the following year. Successful cases have been reported by Schwalbach (1905), Sattler (1905), and F. Park Lewis* (1907). The results go to show that a proportion of cases can be cured by ligation of the ophthalmic vein, an operation, Gifford thinks, that should always be adopted where decided indications of a dilated vein can be felt in the orbit. No fatal case has so far been reported, although alarming symptoms have been noted. In recommending the operation, however, the possibility of a fatal result should not be lost sight of. SYDNEY STEPHENSON.

* For abstract, *see* above.—EDITORS.

X.—TUMOURS OF THE ORBIT.

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(5) Knapp, Arnold.—Two cases of osteoma of the orbit successfully treated by operation. *Archives of Ophthalmology*, XXXV, 1906, 4, p. 353.

(6) Oatman, Edward L.—Case of melanosarcoma of the choroid and orbit. *Archives of Ophthalmology*, XXXV, 1906, 4, p. 318.

(7) Beard, Chas. H. and Brown, E. V. L.—Plexiform neuroma of the orbit. *Archives of Ophthalmology*, XXXV, 1906, 2 and 3, p. 145.

(8) Königshöfer.—Orbital fibroma. (Fibrom der Orbita.) *Die Ophth. Klinik*, Februar, 1907.

(9) Butler, T. Harrison.—A case of chloroma. *British Medical Journal*, 20th April, 1907.

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(13) Chevallereau, A. and Béal, R.—Dermoid cyst of the orbit and cranium. (Kyste dermoïde de l'orbite et du crâne). *Bull. et Mém. de la Soc. française d'ophtalmologie*, T. XXIV, 1907.

(14) Basso, J. (Genoa). — Tumour deep in the orbit; Krönlein operation; Radiography. *Annali di Ottalmologia*, Vol. XXXVI (1907), fasc. 12, pp. 908 to 912.

(15) Lagrange. — Melanotic tumour of the orbit. (Tumeur mélanique de l'orbite.) *Soc. de méd. et de chir. de Bordeaux*, 1er mars, 1907, and *Rev. générale d'ophtalmologie*, juin, 1907.

(16) Valude.—A case of cylindroma of the orbit in a child. (Un cas de cylindroma de l'orbite chez un enfant.) *Soc. d'oph. de Paris*, 6 juillet, 1906, and *Revue générale d'ophtalmologie*, août, 1907.

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(20) Birch-Hirschfeld.—A contribution to our knowledge of osteomata of the orbit. (Zur Kenntniss der Osteome der Orbita.) *Bericht der Ophthalmologischen Gesellschaft zu Heidelberg*, 1907.

(21) Axenfeld, T.—Metastatic carcinoma of the orbit, more especially of the ocular muscles. (Metastatisches Karzinom der Orbita, besonders der Augenmuskeln). *Bericht der Ophthalmologischen Gesellschaft zu Heidelberg*, 1807.

(22) Jocqs.—Dermoid cyst of the floor of the orbit. (Kyste dermoïde du plancher de l'orbite.) *La Clinique ophtalmologique*, 25 novembre, 1907, and *Die Ophth. Klinik*, No. 1, 1908.

(23) Koster, W. — The spontaneous healing of an orbital tumour which had been diagnosed as sarcoma. (Spontane Heilung einer als Sarcoma diagnostizierten Geschwulst.) *Zeitschrift f. Augenheilkunde*, January, 1908.

(24) Dejonc.—On the clinical and pathological aspects of lymphangioma cavernosum of the conjunctiva and orbit. (Zur klinik und pathologischen Anatomie des Lymphangioma Cavernosum der Konjunktiva und der Orbita.) *Klin. Monatsbl. f. Augenheilkunde*, Januar, 1908.

(1) Based upon a most interesting personal study of a case of this character in a six year-old-child, with comparisons of the differences of opinion regarding the proper methods of attacking this extremely grave form of malignant neoplasm, **Ring** believes that the following conclusions are warranted:—1. The difficulty in accurate diagnosis under certain conditions entirely justifies an exploratory excision with removal of a section of growth for microscopic study, the said exploration likewise serving to determine the ramification of the tumour. 2. The brilliant results achieved by a number of accurate observers in the field of Röntgen-ray therapy justify the immediate tentative application of the method before any radical operation is attempted. If unsuccessful in removal of the growth, the virulence of the latter will probably be decreased and the dangers of metastasis lessened (Leonard). 3. If the sarcoma is encapsulated, operative intervention without orbital evisceration promises a successful outcome. 4. In view of the almost constant recurrences after orbital evisceration, the removal of the growth itself is regarded as sufficient unless the periosteum or bony wall is involved. 5. The encouraging results reported from the cataphoric sterilization of malignant growths in other parts of the body seem to warrant the utilization of this method in the orbit, due care being exercised as to strength of current used (Massey). 6. Future experience must determine whether better results will be achieved by using this method for the original growth, or reserving it for recurrence *in loco*. 7. If operation has been performed and the growth has recurred, we have at command these two valuable methods of attack. C. A. OLIVER.

(2) **Johnston** reports a curious case in a man, 65 years of age, where an epithelioma of the antrum seems to have invaded the orbit with fatal result. On the patient's first visit, a small, hard, flat mass could be felt between the left eyeball and the margin of the orbit. Operation refused. A fortnight later, the swelling being larger, the tumour was exposed, and found to be attached to the floor of the orbit. It seemed to have originated from the inner angle of the orbit, from which it could only be removed by cutting-forceps. The fact that the growth was hard and encapsulated caused Johnston to regard it as a sarcoma. A fortnight after operation, the skin over the antrum became red, and the anterior wall of the antrum itself began to swell. The upper jaw, the eyeball, and the contents of the orbit were then removed. Death occurred ten days later. Sections from the growth and from the antrum showed "a typical and very malignant epithelioma." A connection between the two growths —that in the antrum and that in the orbit—could not be made out. The tumour in the antrum had perforated the anterior and posterior osseous walls, but no growth upward could be seen. SYDNEY STEPHENSON.

(3) Of 42 cases of chloroma hitherto reported, one only

has been diagnosed during life, which is remarkable, as the symptoms are fairly well marked. **Pfeiffer's** case here reported was no exception of the rule. He summarizes the principal characters of the tumour in the four following points :— (1) Painful exophthalmos with consecutive optic atrophy (present in nearly three-quarters of all cases—uni-or bilateral) seems to be absent in those rare cases only where the disease originates in, and remains confined to, the lymphatic tissues. (2) Affection of the ear with swelling of the temporal region (in Pfeiffer's case this was the first symptom, as the tumour started from the petrous and mastoid bone.) Körner considers chloroma the most common tumour of the auditory meatus. (3) Acute lymphatic leucæmia with hæmorrhages into the skin and mucous membranes, and glandular swellings. (4) The rapid course of the disease and the youth of the patients. R. GRUBER.

(4) **Schmidt-Rimpler** reports the case of an infant of normal appearance at birth, who soon afterwards exhibited the formation of three great swellings on the head, one in the region of the anterior fontanelle and the other two in the temporal regions. Both eyes were markedly prominent, and there was probably a similar development in both orbits. In both eyes there was a well-marked optic neuritis, with very full veins. Corneal ulceration appeared later, and caused destruction of the anterior halves of both eyes. The child is still living at the age of over one year. A. LEVY.

(5) **A. Knapp** (New York) reports two cases of osteoma successfully removed from the orbit without sacrificing the eyeball. The first was in a woman 28 years of age. The osteoma (2 cm. by 3 cm.) was attached by a small pedicle to the upper part of the posterior half of the os planum. Result of operation excellent, although some diplopia remained in the lower part of the field. The second case was in a female 29 years of age. The osseous nature of the growth was not determined prior to operation. The growth was found to have a broad, firm attachment to the entire upper bony wall, and it had accordingly to be removed in fragments. It sprang from the superior (cerebral) wall of the frontal sinus, and in removing some of the osteoma internally the dura was exposed. Uneventful recovery. Diplopia, however, remained in the lower part of the field of vision. SYDNEY STEPHENSON.

(6) **Oatman** (Brooklyn) removed the eye of a married woman, 56 years of age, on account of a melanotic sarcoma of the choroid. Two tiny extra-ocular deposits of sarcoma were found—one within the sheaths of the optic nerve in the angle formed by the junction of the nerve and the sclera, and the other on the outer surface of the sclera, close to the optic nerve. Rather more than two months (January 11th to March 22nd) after the first operation, the contents of the orbit were removed,

although the periorbitum was left undisturbed. Microscopic examination of the tissues removed from the orbit revealed several sarcomatous deposits, and a few pigmented spindle cells were found in the lymph-space surrounding the optic nerve. The X-rays were applied to the orbit every second day for four months. So far, although one and a half years have elapsed since enucleation, there has been no recurrence. The point of the case is that had the extra-ocular deposits been overlooked, the patient's sole remaining chance of life would have disappeared. SYDNEY STEPHENSON.

(7) Plexiform neuroma is of particular interest to the ophthalmic surgeon, since in 80 per cent. of the cases it involves the temporo-palpebral region or the orbit. The growth, when not in the neighbourhood of the eye, occurs, as a rule, at the nape of the neck, on the back, or on the arm. Not more than about forty cases of plexiform neuroma have so far been reported. **Beard** and **Brown**, of Chicago, now give details of the second case published in American literature. The facts follow:

A medical man, aged 37, had been aware of a growth in the right orbit for five or six years, although a photograph, taken 14 years previously, showed a prominence of the right eye. On examination, right upper lid thick and drooping, and its skin deeply pigmented. Globe displaced downwards and forwards. Vision normal: fundus healthy. An elastic, rather firm, tumour could be felt just beneath the central portion of the upper rim of the orbit. Neither pulsation nor bruit. Tumour not reducible. A number of small, hard knots, some tender and others painful, especially after long-continued use of the eyes in near vision, lay beneath the skin of right temporal region and in front of the ear. Some 17 months later (the symptoms having become accentuated in the meantime) surgical treatment was consented to. A tumour, enveloped by a rather dense capsule, and having about the size of a man's thumb, was dissected out from the orbit. It extended along the supra-orbital nerve from the orbital ridge to the sphenoidal fissure. It had eroded the roof of the orbit. The growth, which "was about the colour and consistence of hog-fat," broke up on handling, the fragments being held together by what appeared to be the trunk of an hypertrophied nerve, which ran longitudinally through the mass. Recovery rapid. The only nerve that lost its function was the supra-orbital. Seen after an interval of nearly seventeen months, no orbital recurrence. *Pathological examination.*—A lobulated, roundish mass of tissue-strands, some 5 cm. long and 2 cm. wide. The various strands were encapsulated and presented fusiform varicosities. The microscope examination of longitudinal sections showed the strands to consist of an inner and an outer zone, of which the latter was made up of fusiform cells and connective tissue containing many empty blood- and lymph-vessels, and the former of altered nerve-substance. On cross section, the tumour strands presented the same details, with the addition of nests of pearls connected with closely-packed fusiform and epithelioid cells which had in places replaced the nerve substance. *Anatomical diagnosis.*—Plexiform neuroma of the supra-orbital nerve. SYDNEY STEPHENSON.

(8) **Königshöfer** removed a fibroma from the orbit of a patient, *ætat.* 19, who had shown the first signs of the condition four years previously. The tumour was 5·1 cm. long and 3·9 cm. thick, and was removed without injuring the eye, through an incision parallel to and a little below the lower margin of the orbit. It was shelled out without any difficulty. It is apparently the largest orbital fibroma on record. Microscopically, it was found to be not a pure fibroma, since it contained clusters of cells of an endotheliomatous character, which were situated especially along the course of the vessels. PERCIVAL J. HAY.

(9) The case reported by **Butler** (Coventry) was recognised as one of chloroma during the patient's life. A girl, aged 11 years, was admitted on account of exophthalmos of the right eye, which was displaced outwards and downwards. The left eye was also affected to a less degree. Bilateral optic papillitis : vision=6/9. Each temporal fossa was occupied by a semi-fluctuating swelling. No enlarged glands could be felt, while the liver and spleen were of normal size. Red corpuscles, 3,000,000 ; white blood cells, 26,000. Differential count rather pointed in the direction of a lymphatic leukæmia. Child very ill, and skin of a yellow-waxy colour. No hæmorrhages into skin or mucous membranes. Three weeks after admission, patient deaf on the right side ; hæmorrhages under skin of right buttock and thigh ; and saliva blood-stained. A fortnight later, alarming hæmorrhage from right orbit, controlled by pressure and perchloroide of iron, but not before the child had become much collapsed. When bleeding had ceased, the eye sank back into the orbit, so that no proptosis existed. Six days after the hæmorrhage, the right lower cul-de-sac was occupied by a bleeding, fungating mass, not of green colour. The right cornea had sloughed. The child died sixty days after admission and about 2½ months after the illness began. *Post-mortem examination.*—Chloroma inner surface of sternum, apex of each lung, whole length of spine, and both ovaries. Right eye disorganized, and a small mass of chloroma, apparently growing from the outer wall, lay deep in the orbit. The lacrymal gland was invaded by the growth. Chloroma in right temporal fossa, together with small masses of growth along the sagittal and coronal sutures, and a large mass on the right half of the occipital bone. Meninges infiltrated with a green growth along the sagittal suture. Right cavernous and lateral sinus filled with growth. Microscopically, the growth was said to be a round-celled sarcoma, with an unusually well-marked stroma. SYDNEY STEPHENSON.

(10) The object of **Meller's** paper is to bring out the points of distinction between lymphomatous tumour, on the one hand, and primary lympho-sarcoma of the orbit, on the other. Both tumours take their origin from the lymphoid tissue of the lacrymal gland or conjunctiva. Aggressive growth is no absolute criterion, as even lymphoma may break through its capsule and infiltrate the surrounding tissues. On the other hand, lympho-sarcoma spreads by way of the lymph vessels to the nearest glands, and the regional character of the disease remains preserved, however large an area may become involved eventually. Against this, lymphoma forms part of a more or less general glandular enlargement. But this clinical distinction may fail in the special case of orbital tumour, for the simple reason that there are no lymph vessels in the orbit. This important fact accounts for some peculiarities of primary orbital lympho-sarcoma ; it remains limited to the

orbit comparatively long without giving rise to secondary growths in the glands of the head, and on this account holds out better prospects of a radical removal and permanent cure than lympho-sarcoma in other localities. Although it may become well-nigh impossible to distinguish between lymphoma and lympho-sarcoma of the orbit by purely clinical appearances, the histological character of the growths will allow of a differentiation in the majority of cases. In this respect the most important point appears to be that, whereas the cellular elements of lymphoma consist of small lymphocytes, those in lympho-sarcoma are formed partly by lymphocytes, partly by cells which are larger than lymphocytes and have a large, pale, nucleus showing a distinct intra-nuclear network. Secondary lympho-sarcoma of the orbit commonly originates in one of the nasal sinuses ; it is accompanied by swelling of the local lymph glands. Meller illustrates all these points by the detailed record of four cases. C. MARKUS.

(11) **Sperber** (Olmütz) reports a case of a thin-walled mucous cyst, with oily contents, met with in the orbit of a man, 52 years of age. The history extended to five months, and for two months there had been diplopia. The cyst was estimated to be nearly the size of a hen's egg. It was merely opened and its contents evacuated. A probe passed into its cavity for from 3.5 cm. to 4 cm. A fistula resulted from the operation, but the opening closed of its own accord during the period of six months during which the patient remained under observation. The cyst-wall was not examined histologically, for the reason that none was removed, but an elaborate analysis of the cyst-contents accompanies Sperber's communication. SYDNEY STEPHENSON.

(12) A woman of 34 years consulted **Leenheer** for a tumour of the left orbit, of ten years' standing. The eye had been blind for seven years. Krönlein's operation was performed, and a tumour, which seemed to fill the muscular cone completely, was removed piecemeal. Reaction, although short-lived, was severe. Recurrence in orbit in a little over two years after operation. Microscopical examination of the fragments of growth removed at the operation showed that the tumour was an example of hæmango-endothelioma. Leenheer concludes a curiously disjointed communication with what he is pleased to call an account of the "literature of endothelioma."

SYDNEY STEPHENSON.

(13) The salient facts of the remarkable case reported by **Chevallereau** and **Béal** are as follows :—

A husbandman, aged 48 years, had noticed fifteen years before he came under the authors' observation, a drooping of his right upper eyelid and a swelling beneath the upper border of the orbit. The tumour slowly became larger. Four years later, the orbital swelling began to tingle, and the patient passed by his nose a large quantity of brownish, oily liquid, which contained numbers of brilliant spangles. As a consequence of this, the local condition became considerably better. The improvement, however, was transitory, for in two years the tumour was as big as

ever. Other symptoms then appeared, as headache, loss of memory, indifference to work and surroundings, and invincible somnolence. These cerebral manifestations passed away gradually. Three years before the man was seen by Chevallereau and Béal, exophthalmos suddenly increased and an ulcer of the cornea made its appearance. Ten days before consultation, exophthalmos again increased and pain was complained of. *On examination.*—The right eye, completely extruded from the orbit, lay on the skin of the cheek, its posterior pole corresponding to the lower margin of the orbit. It had been blinded by neuro-paralytic keratitis. The upper lid was raised by a soft, fluctuating, non-pulsating, and slightly reducible tumour, 1·5 cm. in height. An osseous ridge could be felt to lie behind the middle third of the upper margin of the orbit. The frontal and maxillary sinuses were perfectly illuminable. *Operation.*—The extruded eye was enucleated, and a soft tumour, which filled the orbital cavity and protruded from the latter at the outer part, was felt. The dissection of this mass gave exit to about 100 cc. of oily fluid, filled with sparkling spangles. The finger introduced into the cavity of the cyst, conveyed a peculiar sensation, for the orbital walls were eroded above, inwards, and outwards, and the finger penetrated 8·5 cm. from the upper border of the orbit—that is to say, it encroached to the extent of about 4 cm. upon the cranial cavity. Meanwhile, the oily liquid continued to escape, jerking in response to the respiratory movements. The patient, seen 104 days after operation, was in good health. The liquid which escaped from the cyst was found to contain crystals of cholesterin. The cyst wall (examined by Monthus) appeared to be the wall of an ancient dermoid—distended, and chronically inflamed.

Chevallereau and Béal quote four cases, reported respectively by Adolphe Richard, Gosselin-Demarquay, Rohmer, and de Lapersonne, which were more or less analogous with their own, as abstracted above. Details of these various observations conclude an interesting account of a rare condition.

SYDNEY STEPHENSON.

(14) In **Basso's** case there lay between the external rectus and the optic nerve a fibro-sarcoma the size of a kidney-bean of the large polygonal and round-celled type. Exophthalmus was very considerable, perhaps rather on account of the situation than of the size of the new growth. Radiography had given a positive result (radiogram in fronto-occipital projection for comparison of the two orbits). A. ANTONELLI.

(15) **Lagrange's** patient, a man of 54 years, some months after vague pains in the orbit, developed a pronounced exophthalmos. On examination, visual field normal, slight papillary stasis, some defect of movement of the eye towards the right side. After negative trans-illumination of the sinuses, it was surmised that the underlying condition was one of an orbital tumour, as an hydatid cyst or a malignant growth, situated between the optic nerve and the external rectus muscle. The patient decided to retain his eye. Lagrange therefore performed Krönlein's operation, and was thereby enabled to remove a small soft tumour (encysted), which was found to be a melanotic sarcoma. Lagrange insists upon the benignity of primary melanotic growths of the orbit. It is possible that the malign tumours are those whose pigment proceeds from the pigment of the skin or of the uvea, whereas the benign tumours contain hæmatic pigment. G. D.

(16) A child, aged 2 years, affected with exophthalmos, papillary œdema, and some days later with detachment of the retina, was

subjected by **Valude** (Paris) to the operation of complete evisceration of the orbit. The anatomical examination of the tumour, which filled the bottom of the orbit and penetrated the eyeball, showed that it was a cylindroma. PÉCHIN.

(17) **Watanabe** describes a vascular tumour removed from the orbit of a child six months old. Two operations were necessary to remove the tumour, as it recurred after the first operation. On that occasion little difficulty was incurred in defining and excising the growth, which, moreover, was done without much hæmorrhage, but at the second operation a year afterwards the neoplasm was found to have extensively invaded the surrounding tissues, so that the limits were ill-defined. Under the circumstances, the growth was removed as completely as possible, while at the same time the eye and the muscles attached to it were left intact. No recurrence followed. The microscopical characters of the tissues removed were as follows: at the first operation the tumour consisted of a central mass of widely dilated vessels lying in a stroma with numerous endothelioid cells; outside this the vessels were fewer, and endothelial cells predominated in the microscopic picture; in one part the vessels, along with endothelial cells, could be observed invading the lacrymal gland. The growth excised at the second operation was formed chiefly of endothelial cells, and contained a few vessels. PERCIVAL J. HAY.

(18) **Morax's** patient, a man 40 years old, with good personal and family history, was first seen in August, 1905, when he complained that for about eighteen months he had suffered from severe headache, unaccompanied by vomiting but associated with a swelling in the right temporal region, and an intermittent "odour of moisture," and that for the previous two months his limbs had been weak, and his memory failing. He had previously been treated with injections of calomel and of cacodylate of soda. He was found to have a diffuse swelling in the right temporal region, and exophthalmia of the right eye, with limitation of its movements upwards and outwards. The eyes were both normal, and the vision and fields perfect. The case, treated as one of periostitis, appeared to improve, but on January 8th, 1906, a slight optic neuritis was noted in the right eye, the vision and fields still remaining perfect. The patient was next seen on March 30th, 1906, when he was found to have exaggerated knee-jerks, with left homonymous hemianopsia and definite hemianopic pupillary reaction. After this, he went rapidly to the bad, becoming comatose, and dying on April 7th. At the autopsy the following lesions were found: 1. Extensive meningeal adhesions in the anterior and middle fossæ of the skull; 2. Displacement outwards of the roof of the orbit, the great wing of the sphenoid and the lower part of the squamous temporal with erosion at their surface; 3. A greyish-red tumour with irregular projections, softened in places and

completely encapsuled, occupying the whole of the right temporal lobe, and compressing, without adhering to them, the right optic nerve and tract, the latter of which was bent into the shape of the letter S ; 4. A tumour the size of a hazel nut in the upper-outer part of the right orbit and connected with the intra-cranial tumour through the sphenoidal fissure. On microscopic examination, the tumours were found to be typical sarcomata. The demonstration of the hemianopic pupil was of interest not only on account of the doubts which have been expressed as to the existence of the phenomenon, but also because its presence enabled the position of the intra-cranial tumour to be diagnosed by excluding the possibility of the symptoms being caused by an occipital tumour. Examination in sections of the whole basilar region, stained by the Weigert-Pal method, showed that there was no demonstrable degeneration of the right optic tract, and that the interference with its functions must have been due to pressure. The temporal swelling, which was the chief cause of the difficulties of diagnosis, was due to deformation of the bone from the growth of the tumour. The intra-orbital tumour was unrecognised during life, as it was inaccessible to digital exploration, and apart from the exophthalmos, the only symptom pointing to its presence was the slight limitation in the movement of the eye. R. J. COULTER.

(19) Not more than about fifteen cases of cysticercus of the orbit, according to **Monthus,** have been placed on record. That writer now adds another to the scanty list. The patient, a female, had made some vague complaints about her left eye for about eight months before she sought advice from de Lapersonne at the Hôtel-Dieu at Paris. On examination, slight exophthalmos of the left eye, which was directed somewhat upwards. Movements restricted below. The lower part of the orbital cavity was occupied by an elastic swelling, of which the posterior limits could not be determined. The anterior edge was smooth and hard. The growth, which appeared to embrace the lower part of the eyeball, moved in unison with the last-named. It was free from tenderness. V.=0.5. Fundus normal. The tumour, which was about the size of a date, was removed piecemeal by dissection, and its contained fluid contents—for it was a cyst—were collected. The cyst-wall, as thick in places as 5 mm. or more, was made up of fibrous tissue, together with scattered, striated, muscular fibres. Its inner surface was irregular, and presented the aspect of inflamed connective tissue—numerous leucocytes and giant cells. Amongst the morsels removed during operation attention had been aroused by a little membrane of whitish appearance, and this was identified as the membrane of the parasite. Its outer surface was garnished by a number of nipple-like papillæ, while the membrane itself was composed of fibrillary tissue.

SYDNEY STEPHENSON.

(20) **Birch-Hirschfeld's** (Leipzig) communication on orbital

osteomata has greatly added to our knowledge of these dangerous tumours, and has, besides, suggested methods by which they may be more accurately diagnosed and certainly extirpated. He attempted to answer three questions with regard to them: what prognosis is justified; how can they best be attacked; and how do they arise? Osteomata are so rare that no one surgeon can have seen sufficient to enable him to decide these questions from his own observations, and so an analysis of all the reported cases must be made. Before doing so, Birch-Hirschfeld describes three which had come under his personal care. Two of them were osteomata in connection with the frontal sinus, while one sprang from the ethmoid cells. All three patients were women between 20 and 40, and in all the tumour gradually grew, at first painlessly, but later accompanied by severe headache at the inner corner of the orbit, the eye being pushed downwards and outwards. In all three diplopia was present, there was much limitation of movement, and great diminution of visual acuity, the result of astigmatism caused by the pressure of the growth upon the bulb. In one case the fundus was normal; in the other two there was slight hyperæmia of the papilla. No nasal disease was revealed by rhinoscopy.

The nature of the tumours was easily determined by their hardness, sharp differentiation from the surrounding tissues, slow growth, and absence of inflammatory reaction. But clinical examination could not decide whether they were external exostoses or whether they arose from within the neighbouring sinuses. The extent and position of the growths could only be guessed at. The Röntgen rays gave most valuable information. The diagnosis of exostosis was confirmed, the exact position and size of the tumour were determined, and the best way to extirpate it was in each instance clearly indicated.

The first case is especially interesting. The tumour was clearly shown in a profile X-ray photograph to be a frontal sinus growth. Its shadow blends into that of the posterior and lower walls of the cavity. A broad prolongation stretches out into the upper and inner aspect of the orbit. The sinus is much enlarged. Its anterior wall is separated from the tumour by a considerable space. The tumour was removed by resecting the anterior wall of the sinus. It had a peduncle the thickness of a pencil attached to the region between the ethmoid and frontal bones, which broke easily. The patient did well, and the æsthetic effect of the operation was good.

The second case had symptoms and clinical signs similar to the first, but the skiagraph showed that the tumour was not a frontal sinus growth, but an osteoma in connection with the ethmoid cells. It was, judging from the density of its shadow, an ivory exostosis, spindle shaped and sagittally placed, so that its posterior end was associated with the sphenoid, and directly anchylosed to the base of the skull. It was obvious that

extirpation would be difficult and dangerous. It was accomplished after the ethmoid cells had been freely opened by Kuhnt's method. Probably a fracture occurred in the neighbourhood of the lamina cribrosa; for, in spite of every precaution against sepsis, the patient died with cerebral symptoms on the nineteenth day.

The third case was an osteoma springing from the posterior wall of the frontal sinus, which was resected with the tumour, the dura mater being exposed. The case did as well as the first.

In the frontal sinus case the Röntgen rays showed how easily the tumours could be removed from above. Had they been attacked from the orbit, the operation would probably have failed in each case. The skiagraph separates accessory sinus osteomata from exostoses and hyperostoses.

Birch-Hirschfeld then discussed the prognosis of the disease. Berlin regarded the prognosis, even including those osteomata which grow into the cranial cavity, as entirely favourable, except in so far that they destroy the eye. He was strongly opposed to operative interference, on account of the high mortality following attempts at extirpation. Birch-Hirschfeld comes to an absolutely opposite conclusion. Osteomata of the orbit are very dangerous to life, and the results of operative removal are better than those left to Nature. The statistics are likely to be better in the future now that we have skiagraphy to help in early recognition and localisation.

Finally, Birch-Hirschfeld regards these tumours as the result of a combined process of endochondral and perichondral ossification of a cartilaginous matrix. T. HARRISON BUTLER.

(21) **Axenfeld** (Freiburg) demonstrated to the German Ophthalmological Congress photographs from a case of metastases in the orbit secondary to a mammary carcinoma. Two years after removal of the breast, the patient began to suffer from a progressive paresis of the ocular muscles. At first, a nuclear lesion was suspected; for there were no local signs of an orbital tumour. Only when paralysis was well-marked was slight exopthalmos noticed, which, however, passed off. But at this period the eye showed deficient mobility, the lower lid was stiff and somewhat drawn in. There was optic neuritis and the eye was amaurotic. The whole orbital contents were exenterated, the inner wall with the ethmoid and lacrymal duct and the floor of the orbit were resected and the cavity covered in by a plastic operation. The tumour was chiefly composed of fibrous connective tissue containing only a relatively small amount of carcinomatous downgrowth. The characteristic carcinomatous sections were only obtained from the lower lid. The muscles could easily be distinguished; they were thickly infiltrated with cells, and were undoubtedly the seat of metastatic growth. Axenfeld said that diplopia and ocular

paralysis in cases where cancer has been removed should suggest the possibility of secondary growths in the orbit, more especially in the muscles. T. HARRISON BUTLER.

(22) **Jocqs** (Paris) describes an interesting case of intra-orbital dermoid in a child of 3 years. It revealed itself as a swelling under the eyeball, which pushed up the globe and bulged out the lower lid. Exploratory puncture yielded a sebaceous material. An incision was then made parallel to the orbital margin, and the cyst was found to extend far back into the orbit. The inferior oblique muscle was stretched over the inner wall of the sac, and was carefully dissected off. Owing to its depth, the cyst was removed only incompletely. It contained sebaceous matter and fine hairs. The tumour had not recurred in a year afterwards. Jocqs refers to a case of Lagrange's,* which he had in mind when operating. This was a dermoid cyst which extended far back in the orbit, and in attempting to remove the remainder after amputating the front portion it was impossible to avoid injury to the optic nerve. As the result of the operation, Lagrange found iritis and hypopyon with great diminution of V. from optic neuritis. Bearing this case in mind, Jocqs preferred to leave the deep part of the cyst unremoved, remembering that should it recur "there is another way of reaching the apex of the orbit:" by which doubtless the operation of Krönlein is indicated. ERNEST THOMSON.

(23) **Koster** (Leiden) gives an account of an orbital tumour, which, after microscopical examination, had been diagnosed as a sarcoma springing from the orbital periosteum. After having increased in size during the three months the patient was under observation, it began to diminish, and, ultimately, all symptoms and signs of its presence disappeared. The patient, an agricultural labourer, aged 16 years, who was first seen on July 28th, 1902, said he had noticed a lump in the lower lid, and that a fortnight later both lids became so swollen that he could not open his eye. *Present condition.*—On the right side œdema of the lids, no redness. The globe is 6 mm. lower than its fellow on the left, moves well, and is only slightly prominent. The eye itself is normal, with the exception that the fundus veins are swollen and dark-coloured; the papilla is hyperæmic. V.R. $= \frac{6}{12}$ *cum* — 0·25 = 6/6. V.L. = 6/6. The left eye was normal, except for slight œdema of the lids. The left fundus was also hyperæmic. A tumour of firm consistence could be palpated in the orbit with the little finger. It was situated on the temporal, superior, and nasal aspects of the cavity. On July 31st, 1902, patient returned with severe pain in the orbit. The growth had increased in size. He was admitted, and the tumour exposed by an incision through the conjunctiva on the nasal side. It had a greasy, grey appearance, and looked

*Lagrange's case was published in *Annales d'oculistique*, T. 123, p. 321.

like a sarcoma; it was very vascular; no collections of pus were seen. Histologically, it consisted of sarcomatous tissue.

The nose and accessory sinuses were not implicated. Under the circumstances, the patient was handed over to the surgical department, in order that the tumour might be extirpated. A deep incision was made along the temporal border of the orbit down to the growth. A diffuse infiltration of the zygoma and of the frontal bones was found, so radical extirpation was considered impossible and the patient was sent home. On October 4th, 1902, he was seen again. The tumour was much smaller. No treatment had been carried out. On November 21st, 1903, the growth was so small that the eye was in its normal position; diplopia had disappeared; and only a little thickening could be felt at the orbital margin. In October, 1907, the patient was again seen. He had normal visual acuity, binocular vision, correct position of the eyes, and free movement. Patient was in every way a strong healthy man.

Koster then discusses the case: either it was one of spontaneous disappearance of a sarcoma, or there was an error of diagnosis. He is certain that the condition was not inflammatory, and is strongly of opinion that it was one of those rare cases where tumours disappear. He does not consider that the small amount of iodide which had been administered had influenced the result. T. HARRISON BUTLER.

(24) The first of the two cases reported by **Dejonc** was that of a woman, aged 24, who thought that her right eye had always been a little more prominent than the left. The changes in the former consisted in moderate exophthalmos, slight ptosis, thickening of the inner half of the upper lid, and a semi-transparent swelling, the size of a pea, in the inner angle of the eye. This swelling was continued as a flat sub-conjunctival tumour towards the upper and lower fornix, where it lost itself. The thickened plica semilunaris was removed, and this trivial operation caused a considerable increase in the protrusion of the eye through retro-bulbar hæmorrhage, whereby the existence of cavernous spaces in the orbit, communicating with the conjunctival tumour was proved. The microscopical examination of the excised plica confirmed the diagnosis of cavernous lymphangioma. Considering that the orbit is normally devoid of lymphatics, lymph-cysts in that locality should be regarded as teratoid tumours (Axenfeld).

In the second case the patient exhibited multiple tumours of the same character, there were swellings of the left temple, cheek, and upper lid, all covered by normal skin, and a thickening of the left plica semilunaris, which passed into a flat, dark-red tumour of the lower fornix. In this case the orbit was not involved. C. MARKUS.

REVIEWS.

Bericht ueber die Vierundreissigste Versammlung der Ophthalmologischen Gesellschaft Heidelberg, 1907. Redigiert durch A. WAGENMANN im Jena. Mit 23 Tafeln und 23 Abbildungen im Text. Wiesbaden: Verlag von J. F. BERGMANN, 1908. Price, 11 marks.

This volume of 393 pages represents the proceedings, scientific and official, at the last Heidelberg Congress, which assembled in August, 1907. Its contents, much of which is of value, will be noticed in due course in the columns of THE OPHTHALMOSCOPE.

Transactions of the American Ophthalmological Society. Vol. XI, Part II, 1907. Hartford: Published by the Society.

This paper-backed and well-illustrated volume of 451 pages contains an account of the proceedings of the forty-third annual meeting of the American Ophthalmological Society held in May, 1907, at Washington, D.C.

Transactions of the Ophthalmological Society of the United Kingdom. Vol. 28. 1908. Fasc. I. London: J. and A. Churchill, 7 Great Marlborough Street. Price 4s. net.

The first fasciculus of the *Transactions* of the Ophthalmological Society has just reached us, March 12th—that is to say, when the session is already 5½ months old. It bears the date 1908. No explanatory foreword is given and perhaps none is needed. Members of the Society, of course, know that they may now elect to receive the *Transactions* in a single volume, as heretofore, issued several months after the session had ended, or in three parts (of which that under notice is the first) issued at intervals during the course of the session. The present fasciculus forms a slim volume of something less than one hundred pages bound in a peculiarly inartistic and irritating paper cover, the inside sheets of which contain advertisements of other periodicals. It includes several communications, together with reports of cases and text-figures and plates, of which one is in colour. Neither an adequate table of contents nor an index of any kind is provided.

Précis d'Ophtalmologie. Par le DR. F. TERRIEN. Paris: Baillière et Fils. 1908. pp. 600. Price 10s.

This excellent text book is one of a series of manuals designed to meet the requirements of medical students preparing for their qualifying examinations. One does not expect, therefore, to find

FIG. 30.

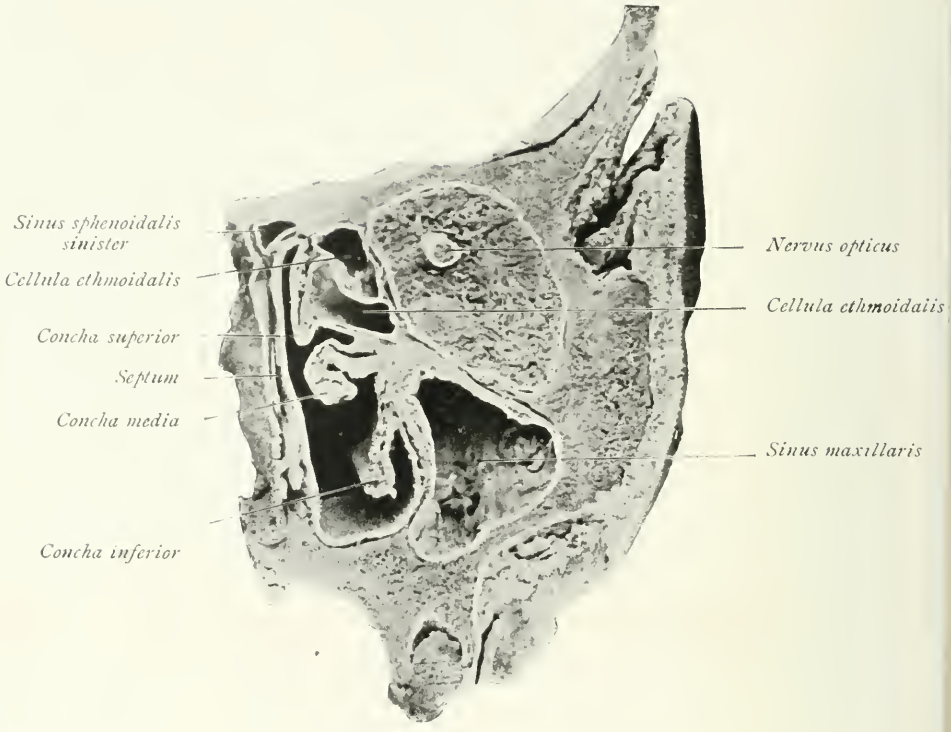
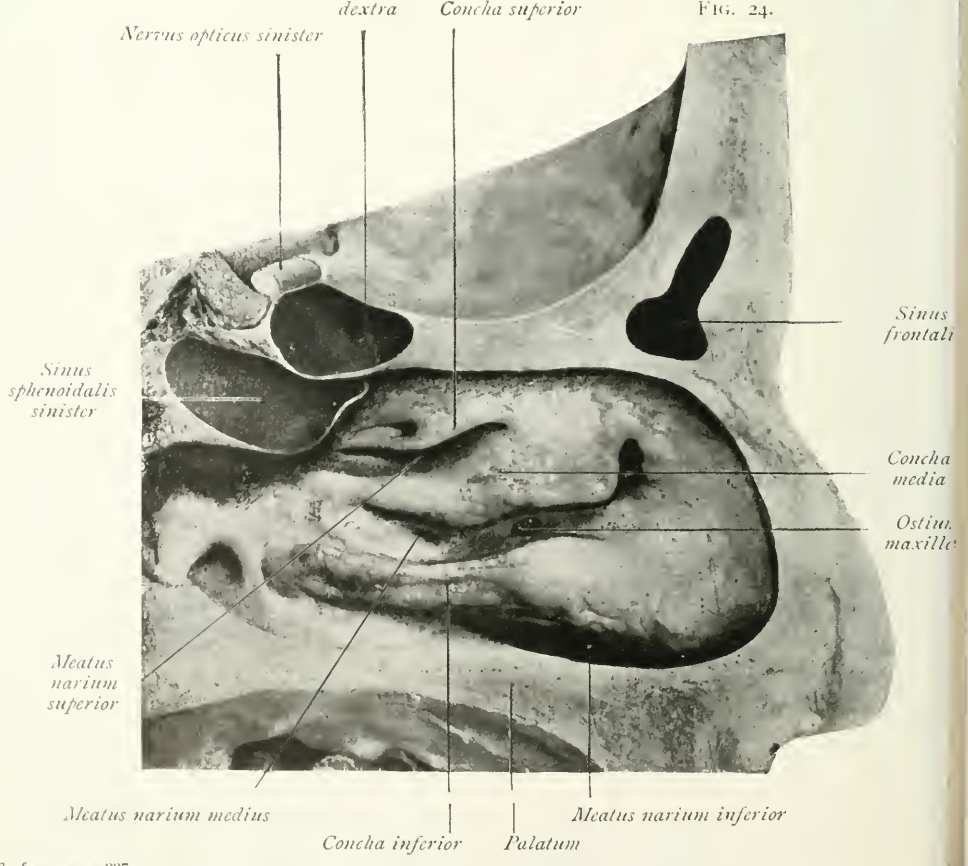

Sinus sphenoidalis sinister
Cellula ethmoidalis
Concha superior
Septum
Concha media
Concha inferior
Nervus opticus
Cellula ethmoidalis
Sinus maxillaris

FIG. 24.


Cellula ethmoidalis posterior dextra
Concha superior
Nervus opticus sinister
Sinus frontali
Sinus sphenoidalis sinister
Concha media
Ostium maxillæ
Meatus narium superior
Meatus narium medius
Concha inferior
Palatum
Meatus narium inferior

in it an exhaustive treatise on ophthalmology, but the reader will be surprised at the fulness with which every aspect of the subject is treated.

The work does not present any novel features, but each group of diseases is considered under the usual headings of normal anatomy and physiology, pathological anatomy, ætiology, symptoms, etc., the essential facts in each case being fully and clearly stated.

That the author has been able to present such a complete epitome of the subject in the space at his disposal, is partly due, no doubt, to the liberal use of small type where possible. At the same time, the book is written in a style which is at once concise and free from ambiguity. It can therefore be read with pleasure.

The illustrations are for the most part good and useful. Figures 106 and 131, however, do not show the points which they are supposed to illustrate (keratitis punctata, and iritis with synechiæ), and some of the pictures of fundus-changes could be improved upon. A full index and a table of contents are provided. A. J. Ballantyne.

Der Sehnerv und die Nebenhöhlen der Nase. (The Optic Nerve and the Accessory Nasal Sinuses.) Von Prof. Dr. A. Onodi. Wien und Leipzig: Alfred Hölder. 1, Rotenturmstrasse, 13, 1907. Price, 6 marks.

In this volume of 69 pages, which include 32 life-sized photographs beautifully reproduced in half tone, Onodi gives a *résumé* of his epoch-making observations on the accessory nasal sinuses in relation to canalicular neuritis and to atrophy of the optic nerve.

The treatise is divided into two main parts :—

i. Topographical anatomy.
ii. Clinical observations.

I.—The topographical part forms the bulk of the book, and constitutes a record of ten years patient and laborious research which must revolutionise our conception of the relationship of diseases of the accessory sinuses to those of the optic nerve, and greatly modify the anatomical teaching with regard to this important region. Onodi describes 38 different relationships between the accessory nasal sinuses and the optic canal and sulcus. These relationships, in turn, he arranges in twelve main groups.

In the first three groups—13 relationships—the posterior ethmoidal cells form the chief relationship to the optic nerve. This relationship may be homolateral, contralateral, or bilateral. Fig. 30 shows how the ethmoidal cell may exclude the sphenoidal from relationship with the optic nerve, and also how thin the walls of the optic canal or that between the sphenoidal and

ethmoidal cells may be. In groups iv. and v.—12 relationships —the sphenoidal sinuses form the chief relations of the optic nerve in the canal and sulcus. Fig. 24 shows the marked variations in the boundary walls and a contralateral relationship of the right sphenoidal sinus to the left optic nerve. In groups vi. to x. are described ten relationships, in which both the posterior ethmoidal and the sphenoidal cells are concerned, Group xi. shows that the frontal sinus may have relationship to the optic nerve in two forms, either alone or as part of a common cavity formed by the fusion of the frontal and ethmoidal cells. Group xii. indicates an occasional relationship between the superior turbinal cell (bone cyst) and the optic canal and sulcus.

The author then proceeds to show the bearing of these very important anatomical findings on the production of visual disturbance and blindness by diseases of the accessory sinuses. He shows that the probability of the former being set up by the latter is considerably influenced by the strength and thickness of the boundary and septal walls of the limiting accessory cavity or cavities, by the presence or absence of bony dehiscences in their walls, and the extent of affected nasal sinus. Onodi has shown (Fig. 30) that the wall between the posterior ethmoidal cell and the optic canal and sulcus opticus is generally of the thickness of thin paper only. Bony dehiscences favour the transmission of disease to the orbit, skull, and optic nerve, either by contiguity or by implication of bloodvessels.

Onodi has also shown the great variability in the extent of the accessory cavities, *e.g.*, the maxillary antrum or the sphenoidal sinus may be so spread out that they lie alongside of each other, and the frontal sinus may extend to the foramen opticum. The extent or relations of the ethmoidal semi-canal (Onodi) has also an important bearing in this respect.

II.—In the clinical part the author analyses and criticises a large number of published cases of diseases of the accessory sinuses associated with visual troubles. He acknowledges the difficulty of explaining some of the cases on an anatomical basis, and insists on the possibility of simultaneous but unconnected optic neuritis and empyema. On the other hand, cases have been recorded where the bony wall had been destroyed in sphenoidal empyema without causing any visual disturbance. He also observes that some cases get well of optic neuritis under purely medical treatment, whilst others are not benefited by surgical treatment of the nasal disease.

The author also discusses the production of traumatic lesions of the optic nerve in the optic canal, *e.g.*, from the use of hammer and chisel in operations on the frontal sinus, antrum, etc. He also devotes much attention to the venous plexuses of the accessory nasal cavities, their communications, and their effect in the propagation of disease.

This volume gives us the outlines of an exemplary piece of

original research, the results of which are so important and far-reaching that it must at once become classical

No ophthalmologist, rhinologist, or anatomist can afford to be without this volume, and practitioners generally should make it their duty to become conversant with its contents. We hope that its sphere of usefulness will soon be extended by a translation into English. J. JAMESON EVANS.

Die Krankheiten der Orbita (The Diseases of the Orbit). By A. BIRCH-HIRSCHFELD. With numerous figures in the text and several tables. Leipzig: Wilhelm Engelmann, 1907.

Diseases of the Orbit, which extends to 240 pages, forms the thirteenth section of the new Graefe-Saemisch *Handbuch für gesammten Augenheilkunde*. It is the work of a distinguished correspondent of THE OPHTHALMOSCOPE, Professor A. Birch-Hirschfeld, of Leipzig. The main subjects treated of include the various kinds of exophthalmia and enophthalmia, affections of the nasal accessory sinuses, and dislocation or avulsion of the eyeball. Each chapter is accompanied by numerous references to work, German and otherwise. Professor Birch-Hirschfeld's monograph must be regarded as an authoritative exposition of the subject.

The Royal London Ophthalmic Hospital Reports. Volume XVII, parts I and II. Edited by WILLIAM LANG, F.R.C.S. London: J. and A. Churchill, 7, Great Marlborough Street. Price 5s. net each.

These two parts of *Moorfields Hospital Reports*, commonly so-called (which should have been noticed before in our columns), bear the dates respectively of March, 1907, and January, 1908. The authors include Nettleship, Lawford, Coats, Hancock, Mayou, Hepburn, Henderson, Butler, and C. Goulden, together with Janie H. McIlroy and Janet E. Lane-Claypon.

NOTES AND ECHOES.

Obituary.

WE regret to announce the death, at the age of 70 years, of Dr. D. B. St. John Roosa, a well-known ophthalmic surgeon. Dr. Roosa was president of the New York Post-Graduate Medical School, and formerly held professorships in the University of Vermont and City of New York. It is interesting to note that Dr. Roosa acted as assistant surgeon to the New York volunteers during the civil war. Dr. Karl Kanka, of Pressburg, is dead at the ripe age of 91 years. He was an Hungarian ophthalmologist of repute.

The deaths are also announced of Dr. John E. Covey, a prominent American ophthalmic surgeon, and of Dr. J. Homer Coulter, formerly of Chicago, U.S.A.

Appointments.

DR. John Wharton has been appointed assistant surgeon to the Manchester Royal Eye Hospital, and Mr. Robert Jaques, formerly house-surgeon to the Royal Eye Hospital, Southwark, surgeon to the Plymouth Royal Eye Hospital. Dr. Casimir Majewski has been nominated extra-ordinary professor of Ophthalmology in the University of Cracow, Austria. Dr. Paul Knapp has been recognised as *privat-dozent* of ophthalmology, at Basle. Dr. Astenori Bertoni, at Florence, and Dr. A. Fenoaltea, at Naples. Dr. K. Wessely has settled in Würzburg as first assistant in the University Eye Klinik. Dr. M. Wolfrum, assistant to Professor Sattler, of Leipzig, has been nominated professor of ophthalmology. The following appointments have been made to the eye department of the Toronto General Hospital:—consulting surgeons, Drs. G. Sterling Ryerson and G. H. Burnham; surgeon, Dr. R. A. Reeve; senior assistants, Drs. C. Trow. J. M. MacCallum, and D. Maclennon; clinical assistants, Drs. Colin Campbell and W. H. Lowry. Dr. P. J. Pontius has succeeded Dr. W. W. McClure as chief surgeon to the Wills Eye Hospital, Philadelphia, Pa. Dr. H. J. Rhode has been appointed ophthalmic surgeon to the Reading Hospital, Reading, Pa. Dr. A. Thomson and Dr. Burton Chance have been appointed to official positions on the Pennsylvania Railroad at Philadelphia. Dr. Tooke has been nominated associate in ophthalmology to the Royal Victoria Hospital, Montreal, Canada.

* * * *

Annual Meeting, British Medical Association.

PROFESSOR Fuchs has accepted an invitation to attend the Ophthalmic Section of the Annual Meeting of the British Medical Association, to be held at Sheffield, Yorks, in July next. Another distinguished foreign guest will be Professor Axenfeld, who has charge of one of the official discussions, namely, that on sero-therapy.

* * * *

Purkinje's Bust.

A marble bust of Purkinje has been unveiled in the Physiological Institution at Breslau. Purkinje, whose name is familiar to every ophthalmologist by reason of his famous "figures" or "networks," may be regarded as the founder of German experimental physiology.

* * * *

Miners' Nystagmus.

MINERS' nystagmus is, by a recent order from the Home Office, now included among trade diseases, for which compensation can be claimed against an employer.

* * * *

Sight in the Army.

READERS will doubtless recollect that the War Office recently asked the opinion of the Council of the Ophthalmological Society of the United Kingdom (see *Transactions*, 1907, p. 296) as to the standard of sight that should be required of candidates for the Royal Military Academy (Royal Artillery). The Council advised as follows:—"A candidate shall be considered fit, provided he has, with both eyes open, vision of 6/6 without hesitation, and also that he is able, in like manner, to read diamond type, provided that the vision of neither eye separately be less than 6/12". It looks as if the authorities had not adopted the Council's advice which was reached after careful consideration. At least, Mr. Haldane, the Minister of War, stated on March 12th last, that Army Commissions may be given if only one-fourth of normal vision in each eye can be corrected by glasses, or with one eye normal, one-sixth of normal vision in the other can be corrected. The use of glasses was not prohibited.

* * * *

Railway Ophthalmologists.

THE following paragraph is culled from a recent issue of the *British Medical Journal*: "The Russian Ministry of Railway Traffic has allocated 600,000 roubles for the establishment of a rational system of care of the eyes of railway employées. The railway Boards of management have been directed to engage the services of oculists at a salary of 1,200 roubles (about £120), whose duty it shall be, not only to do ambulance work, but to inspect the employées' eyes, and, where necessary, treat them."

* * * *

A Lady Ophthalmologist.

MISS ETTIE SAYER, of Upper Brook Street, London, has recently been commended in the Westminster Coroner's Court for the courageous efforts she made to save the life of her cook, whose petticoats had been set on fire by some sparks from the kitchen range. Dr. Sayer, who was in one of the uppermost rooms of her house, heard shrieks, and ran downstairs, to find the domestic enveloped in flames. Hurrying to her consulting-room, Dr. Sayer seized a big rug, threw it around the cook, and, tripping her up, extinguished the flames. Miss Ettie Sayer, the heroine in this painful case, is a graduate of London University, and formerly filled the post of house-surgeon to the Tunbridge Wells Eye and Ear Hospital. She was one of the oculists to the School Board for London, and now holds an appointment under the Board of Education, London County Council. It is pleasant to read of one of our number making such gallant efforts to save a fellow being from destruction, and we can only regret that her efforts were not crowned with success.

Ophthalmia Neonatorum.

On March 17th Lord Robert Cecil asked the President of the Local Government Board whether his attention had been called to the large number of cases of blindness caused by ophthalmia of the newly-born; whether he was aware that in the great majority of cases timely treatment of this disease would prevent this result from ensuing; and whether he would take steps, by circular or otherwise, to induce the local authorities, under Section 7 of the Infectious Diseases (Notification) Act, 1889 to order that that Act should apply to this disease.—Mr. Burns replied: I am aware that timely treatment will prevent blindness following on ophthalmia of the newly-born. This is fully recognised in the rules of the Central Midwives Board, which direct a midwife in attendance at a confinement, in any case of inflammation of the eyes of the child, however slight, to explain to the husband or nearest relative or friend present that the case is one in which the attendance of a registered medical practitioner is required and to give him a form for sending for such help. She must send a copy of this form to the local supervising authority which is thus made aware of the case. I would point out that the primary object of the Infectious Diseases (Notification) Act is to prevent the spread of infection. This danger scarcely exists in cases of ophthalmia of the newly-born. I am afraid that I could not properly take the precise course suggested by the noble lord in the last part of the question, but I am giving consideration to the whole subject.

* * * *

Fuch's Ophthalmology.

The eleventh German edition of Fuch's famous *Text-Book of Ophthalmology* has made its appearance in English. The translator is Dr. Alexander Duane, of New York. The publishers are J. B. Lippincott Company, 5, Henrietta Street, Covent Garden, London, W.C. The price is 25/- *net.*

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THE

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CONTENTS.

Original Communication—

1. A. Rudolph Galloway, M.B., C.M., M.A.—Five additional cases of Serious Visual Deficiency affecting responsible employés in the Marine and Railway Services 344

Clinical Memoranda—

1. Dr. Nasr Farid.—Indications for Iridectomy in Irido-Choroiditis ... 347
2. Sydney Stephenson.—A case of Persistent Capsulo-pupillary Membrane and Hyaloid Artery, with atypical Development of the Vitreous 347

Novelties—

1. A Binocular Magnifier 349

Review—

1. Ernest Thomson, M.A., M.D.—Some recent British Work on Ophthalmia Neonatorum 350

Translation—

1. Dr. Félix Lagrange.—On the Filtering Cicatrix in the Cure of Glaucoma 363

Current Literature—

I. Pneumocele of the Lacrymal Sac 374
II. Traumatic Enophthalmos 376
III. Cysts of the Iris 377
IV. Foreign Bodies: their Removal, Localisation, etc. 380
V. Eye-Strain 384
VI. Remedies 387
VII. Operations 394

Addendum to Dr. H. M. Fish's communication published in the last number of "The Ophthalmoscope"

Reviews 401

Notes and Echoes 405

FIVE ADDITIONAL CASES OF SERIOUS VISUAL DEFICIENCY AFFECTING RESPONSIBLE EMPLOYÉS IN THE MARINE AND RAILWAY SERVICES.*

BY

A. RUDOLF GALLOWAY, M.B., C.M., M.A.,

EX-PRESIDENT, ABERDEEN MEDICO-CHIRURGICAL SOCIETY; HONORARY OPHTHALMIC SURGEON, ABERDEEN EYE INSTITUTION; LECTURER ON OPHTHALMOLOGY, ABERDEEN UNIVERSITY, ETC.

On April 4th of last year, I had the honour to read before the Society the case of a captain of a Government cruiser suffering from tobacco amblyopia, the case of a congenitally colour-blind trawl skipper, and that of a myopic express engine driver, all on active duty, and I stated that we saw in these cases the forces in operation that may be accountable, although they may not then be discovered, for serious accident in the future. The Shrewsbury disaster, which occurred in the early hours of Tuesday, 15th October, 1907, causing the death of eighteen persons and serious injury to many others, is only one more added to the list of so-called "mysterious accidents, for which no adequate reason can be found." A likely cause of the mystery, however, is not difficult to find; the locomotive foreman in this case admitting, on being examined by Mr. Lloyd-George, that he had himself to certify that the driver (who was killed) was in good health and fit for his duties, and also stating that there had been no examination by a medical man since the driver's admission to the service, about forty years before the date of the accident.

A desire to prevent, so far as possible, similar accidents in the future, is my reason for drawing attention to the following five additional cases of serious visual deficiency affecting responsible employés in the marine and railway services.

1. Engine driver with compound myopic astigmatism.

On November 18th, an engine driver came to the Eye Institution, and gave the following history: he was single, 32 years of age, and had been in railway service for fourteen years; he had noticed his sight defective for ten years, during which time the left pupil had been rather larger than the right; for most of that period he had acted as fireman, but three years ago he passed the driver's examination, being examined by a lay inspector, and thereafter by the superintendent; he had not been tested since then, but had noticed his sight getting somewhat worse.

*Read before the Aberdeen Medico-Chirurgical Society on February 20th, 1908.

His acuity of vision was as follows :—

Right $\frac{6}{24}$ 1 letter — 1 D. sph. —·75 D. cyl. ax.vert. = $\frac{6}{6}$

Left $\frac{6}{60}$ — 1·5 D. sph. —·5 D. cyl. ax. 60° = $\frac{6}{6}$

His eyes were normal in all other respects. This man attributes his being able to pass the driver's examination to the fact that the examiner made him occlude one eye by means of a card for the distance form test. By looking round the edge of the card with the other eye, he managed to improve the vision considerably.

Both eyes of this patient were put fully under the influence of homatropine and cocaine drops with no material alteration of refraction.

He is at present regularly employed as engine driver on an Aberdeenshire railway.

2. Hypermetropic engine driver.

On January 13th of this year, an engine driver, aged 45, sought advice at the Eye Institution and stated that he had passed the required eyesight examinations, 1 year and 9 months previously, and also 5 years ago; he also stated that his next regular examination did not take place for 1 year and 3 months. On being tested with the distance types, his acuity of vision was as follows :—

Right $\frac{6}{24}$ H.m. 2 D. = $\frac{6}{6}$

Left $\frac{6}{18}$ partly H.m. 2 D. = $\frac{6}{6}$

He was able to read J.^{8} only and J.^{1} with + 3 D. sphs.

This case demonstrates the fact that the ordinary visual form test is not sufficient; for this man, in his earlier years, had been able to pass it easily, and it was only owing to failure of accommodation with advancing age, that the defect had come into prominence. In the case of each candidate wishing to become an engine driver or to fill any other responsible post, a full estimation of refraction should be made.

This patient being conscious of his defect, and so far, admitting it, was usually employed as shunter in the yard, but during busy holiday times, he drove on the main line, just the very time when he should not have been let loose from the yard.

In both these engine drivers I ordered glasses and advised the use of them on the sly, as they are prohibited.

3. Trawl fisherman with compound myopic astigmatism.

On January 10th of this year, a trawl fisherman, age 26, sought advice at the Eye Institution, saying that he had acted as mate on his boat for two years, and that he had frequently been the only one on the look-out. The state of his vision was as follows :—

Right eye $\frac{6}{36}$ — 1 D. sph. — 2 D. cyl. ax. 150° = $\frac{6}{6}$

Left eye $\frac{6}{60}$ — 1.5 D. sph. — 2 D. cyl. ax. 150° = $\frac{6}{6}$

4. Congenitally colour-blind trawl fisherman.

On February 14th, a trawl fisherman, aged 28, who acted as second fisherman on his boat, came to the Institution to be tested for colours; he had been nine years at sea, and for four years had been frequently in sole charge and the only one on the look-out. With Holmgren's wools he was shown to be colour-blind; he matched greys and drabs with the pale-green test skein, pale-blue with the rose-pink, and browns with the red; he stated that a pale-blue and rose-pink skein were more alike in colour than a pale-blue and a dark-blue.

5. Congenitally colour-blind mate of trawler.

On February 14th of this year, the mate of a trawler came to the Institution to be tested for colour perception. He was 26 years of age, had been eight years at sea, and for four or five had been frequently in full charge of his boat. In July last he obtained his mate's certificate, not after submitting to the new Board of Trade examination, but because he had acted as mate of his boat for a period of twelve months. He now wishes to try for his skipper's certificate.

With Holmgren's wools he made all the mistakes of the previous case in a more marked degree. He matched a bright-green skein with the red test skein. He is, in point of fact, colour-blind, and so long as he does not press for his skipper's ticket, and rests content with his "servitude" certificate, he may, I presume, jeopardise the lives of those who travel by sea, and few be any the wiser. It is not comforting to know that, owing to a threatened shortage of skippers, or other reason, the Board of Trade has reduced the period of service necessary as skippers or second hands from twelve months to six (until July 1st, 1908) and that, as a result, about seventy skippers who did not submit themselves to the new examination, are now sailing regularly from Aberdeen. It is fair to assume that some had good reason for not submitting to the examination, an assumption which is supported by the case just related.

CLINICAL MEMORANDA.

INDICATIONS FOR IRIDECTOMY IN IRIDO-CHOROIDITIS.

BY

DR. NASR FARID,

OF MANSOURAH, EGYPT.

A. B., 55 years, came under observation in January, 1906, complaining that the vision in his left eye was defective, the vision of the right eye appearing to be normal. His doctor had informed him eight months ago, after examining him, that he was suffering from syphilis. He had been treated by hypodermic injections of mercury cyanide.

At the time I saw him he had a skin eruption, together with enlargement of the inguinal glands. R.E. Iris normal: V.=$\frac{1}{20}$; disturbance in the vitreous, field normal. L.E. Posterior synechiae with central exudation; V.=hand movement.

I treated the patient with intravenous injections of mercury, and after an interval, with hypodermic injections. Local treatment with atropin and hot fomentations was also ordered for the left eye. On the subsidence of the acute symptoms, subconjunctival injections were made.

Congestion of the brain occurred after four months. By these means the exudations were absorbed, and by July, 1907: V.R. c. sph.+2=$\frac{1}{10}$, V.L. c. sph.+3=?

As no further improvement resulted, I performed iridectomy in both eyes in October, 1907. The same treatment was continued until January, 1908, when the: V.R. c. sph.+2=$\frac{1}{8}$, V.L. c. sph.+3=$\frac{1}{3}$.

A CASE OF PERSISTENT CAPSULO-PUPILLARY MEMBRANE AND HYALOID ARTERY, WITH ATYPICAL DEVELOPMENT OF THE VITREOUS.*

BY

SYDNEY STEPHENSON.

LONDON, ENGLAND.

Florence B———, 15 years, first seen at the Kensington General Hospital on February 5th last.

Family History.—Father died at 50 years, from malignant disease, lasting four months. Mother, aged 54 years, in good health. Seven children born alive, of whom six, including the patient, Florence, survive. All babies born at term. No history of deformities in the family can be obtained.

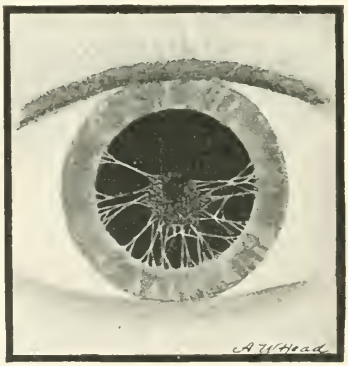
Personal History.—When aged 16 months, Florence had a "fit," and this was followed by a squint of her right eye,

*Patient shown before the Society for the Study of Disease in Children on February 21st, 1908.

for which she was taken to the Moorfields Hospital. She has worn glasses for eight years. Beyond the condition of the eye, there is no deformity.

Present State.—A well-grown and intelligent girl of 15 years. The right eye is directed inwards and slightly upwards, so that the corneal reflex lies on the outer margin and somewhat below the horizontal meridian of the (undilated) pupil. The right eye is a little smaller than its fellow, as shown by the fact that the transverse diameter of its cornea measures 10.5 mm. as compared with 11 mm. in the other eye. The movements of both eyeballs are good. Right vision = hand-reflex, with or without the glasses she wears. Left vision = 5/12, not improved by her glasses.

With the right pupil undilated, several slack festoons may be seen to extend from the lesser circle of the iris, on the one hand, to a *plaque* on the anterior capsule of the crystalline lens, on the other. When the pupil is dilated, as with atropine, these threads become taut, and form (as shown by the picture) a beautiful



example of capsulo-pupillary membrane. Thus, occupying roughly the lower two-thirds of the dilated pupil are many fine interlacing and anastomosing fibres, which originate from the anterior surface of the iris, and which are inserted into a C-shaped *plaque*, more or less pigmented, lying on the anterior capsule of the crystalline lens. Two other congenital peculiarities are also present in the right eye, namely (1) a persistent hyaloid artery, and (2) an atypical mesoblastic development. (1) The hyaloid artery, which does not contain blood, is visible as a dark-coloured cord running roughly in the axis of the eye, its various parts being seen in succession as stronger and stronger lenses are placed behind the ophthalmoscopic mirror. (2) The retinal vessels are sheathed in opaque, white, glistening bands, which in some instances extend for a considerable distance into the fundus oculi and follow the bifurcations of the vessels. The white material

varies in amount. The vessels themselves, which carry blood, are more or less concealed by the exudation. The latter can be seen with a *plus* 4 or *plus* 6 D. lens. Refraction, hyperopic.

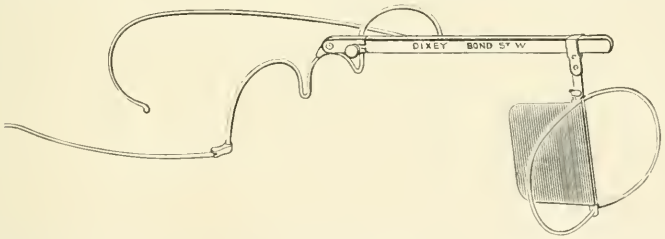
As regards the left eye, a tenuous thread of pupillary membrane, with anchor ends, crosses the dilated pupil from above downwards at the junction of its middle and outer thirds. Refraction (estimated under atropine) *plus* 2·0 D. sph. with *plus* 2·5 D. cyl. axis 160 degrees=5/5.

NOVELTIES.

A BINOCULAR MAGNIFIER.

A binocular magnifier, made by Messrs. Dixey & Son, of Bond Street, is a development from the *loupe stéréoscopique* suggested by Dr. Berger, and is now perhaps offered in a more convenient form than that originally given to the instrument.

It is mounted on a spectacle frame with folding sides, and packs conveniently into a pocket case. The lenses are held in place by an aluminium bar, upon which they slide, thus affording an adjustment for convergence; focal adjustment is obtained by moving the head back and forward. The bar is hinged at its



attachment to the spectacle frame, and can be lifted out of the way, and brought back again for use, as required. There is a prismatic addition to the spherical lenses, which adds to the stereoscopic quality of the magnifier. It is suggested that this is useful, as giving a better means of estimating the depth of an object looked at. The lenses magnify about four times. Distance spectacles should be worn to get the normal effect of the magnifier, but a moderate amount of uncorrected hypermetropia does not interfere with its efficiency.

In many ways the instrument may be useful to the surgeon, as in searching the surface of an eye for foreign bodies or for ulcers; in the examination of the lids, iris, etc.; in operations, where the enhanced definition of depth is useful; in the removal of hairs by electrolysis, and so on. It is further suggested that it may be recommended in certain cases of low visual acuity, or where the sight is obscured by opacities.

The manufacturers inform us that they are indebted to Mr. E. Treacher Collins for suggesting modifications in the construction of the instrument.

REVIEW.

SOME RECENT BRITISH WORK ON OPHTHALMIA NEONATORUM.

BY

ERNEST THOMSON, M.A., M.D.,

EDITORIAL SECRETARY OF "THE OPHTHALMOSCOPE"; SURGEON, GLASGOW EYE INFIRMARY; OPHTHALMIC SURGEON TO THE GLASGOW MATERNITY HOSPITAL.

A great deal has recently been written on the ever-important subject of ophthalmia neonatorum by a number of authors, but more especially by Sydney Stephenson, whose Middlemore Prize Essay (1907) stands as the principal work of reference on this disease in the English language (1). So comprehensive, indeed, is this book, that one who essays to review the subject is bound to find that, in great measure, he must quote from it. The present reviewer wishes to discount the criticism that his remarks are largely quotations from Stephenson's book. They are so, and the explanation must be found in the comparatively small amount of really new work which any individual has recently done on this subject. In the main, Stephenson has collated all the available facts and taken cognizance of present-day opinions, so that only a small number of points are to be found in the recent work of others which are not to be found also in the Middlemore Prize Essay.

This being granted, the writer may possibly do something useful if he endeavour to present to the readers of this journal the main points as they stand to-day in the smallest possible compass. As far as may be, quotation marks will be avoided, since, for the most part, there is no question of originality on the part of the reviewer.

Statistics.

The proportion of cases of ophthalmia to total births is, for various reasons, very difficult to determine. Harman (2) considers that probably 1 per cent. of the children born in London suffer from purulent ophthalmia, and that 1 per 2,000 born become partially or completely blind from this disease.

What proportion of those who are blind have been rendered so by Ophthalmia Neonatorum?

Various figures are given by different writers. Harman (*loc. cit.*) says that more than one-third of the blindness among school children is due to this disease. Snell's figures (3) at the Sheffield School for the Blind, are 42·36 per cent. Mayou (4) has found, after collecting information from all the Blind Schools in England, that the proportion due to ophthalmia neonatorum is 27 per cent. of the blind under 18 years of age.

What does this blindness cost the nation annually?

On the basis that each blind adult costs the State £25 and the charitable another £25, Stephenson (*loc. cit.*) calculates that the 7,000 persons blind from ophthalmia neonatorum cost the nation £350,000 annually.

Is the disease diminishing in frequency?

This is one of the most important points which has recently received attention. The opinions of different writers are at variance, and there can be little doubt that the incidence of the disease varies in different districts. This variation is, one would think, more likely to depend upon differences in prophylaxis than upon differences in the proportion of cases of gonorrhœa in the parents. It will be advisable to give actual quotations from various authors.

Mayou (*loc. cit.*): "As shown by the returns of the census and the Blind Schools, there was a more or less sudden decrease in the number of cases of ophthalmia neonatorum after the introduction of prophylactic treatment, and since that time a gradual decrease has been going on, but the disease is still prevalent to a very unnecessarily large extent . . . ."

Snell (*loc. cit.*): "My practice at the Sheffield Royal Infirmary did for some years lead me to hope that the disease was becoming less frequent, but more recent experience has rendered me less sanguine in this respect."

Evans (5): "It is a regrettable fact that the percentage of ophthalmia neonatorum to other cases of eye diseases attending this hospital (*viz.*, the Birmingham and Midland Eye Hospital) is the same to-day as it was 20 years ago, and only 25 per cent. better than it was in the preceding decade, which included some of the years previous to the discovery of the gonococcus and the method of treatment instituted by Credé."

Stephenson, on the other hand, says:—"Every ophthalmic surgeon will admit that cases of ophthalmia neonatorum are becoming scarcer day by day," a statement which is too sanguine in view of the previously-quoted opinions of ophthalmic surgeons. The present writer himself (6) took exception to it, and quoted the figures from the Glasgow Eye Infirmary, which only allowed him to admit a *tendency* to diminution of the disease.

Less comprehensive is the remark of Harman (*loc. cit.*): "My experience of the blind in the London County Council Schools, and of the disease in hospital practice, indicates that the disease is diminishing in London . . . ."

From the foregoing quotations it will be seen that it is at least doubtful whether, in spite of all that is known about the disease, its ætiology, and its prevention, we are to-day making any progress towards a reduction of the blindness, misery, and expense caused by it. Indeed, the recent output of literature on the subject has probably been to some extent provoked by a feeling among medical men that more ought to be done to lower the incidence of the disease by methods of prevention.

Ætiology.

Of the ætiology of the disease a great deal has been known for a long time, and the reviewer is reluctant to detail facts, most of which are well-known, and yet feels that he must at least try to summarize them for the sake of completeness.

The mode of infection: predisposing causes.—Infection takes place (1) before, (2) during, (3) almost immediately after, or (4) some days after birth. Since the child's eyelids are normally closed and sealed during birth (1) and (2) are less common than (3) and (4). The third is probably the commonest mode of infection, maternal discharges being introduced to the child's eyes by blinking of the eyelids, the baby's fingers, or by the water, sponges, or towels used for the first bath. Stephenson considers that the one most frequent moment of infection is in the final stage of the birth of the head or just immediately after birth. Infection takes place partly owing to the action of the stretched perineum on the eyelids, and partly owing to blinking of the eyelids.

Mayou indicates (*loc. cit.*) that the conjunctival sac of the infant is specially liable to infection owing to deficiency in the epithelium, since in most parts it is thinner than in the adult, and to the fact that protective lymphoid tissue is absent from the conjunctiva at birth. Mayou has also found *that the prophylactic treatment with silver nitrate hastens the formation of lymphoid tissue, thus producing a "barrier of leucocytes against infection."*

No one at the present day doubts that the ordinary mode of infection is from maternal vaginal discharges, but there are differences of opinion as to certain contributory causes. Thus, Wharton (7) says that during the passage of the head along the vaginal canal the lids may be displaced by friction, and that, therefore, we should expect to find the disease more prevalent among first children, male children, and where the labour has been tedious. Wharton states that this is borne out by observation. Stephenson, on the other hand, says that there is no evidence in support of the view that the causation of ophthalmia is influenced by the size of the child, the nature of the presentation, the length of the labour, or the primiparous or multiparous state of the mother. He quotes figures that appear to support his contention. Further investigations seem to be needed here.

The nature of the infection.—Stephenson strongly holds that most cases of acute ophthalmia originate from a chronic, latent, or residual gonorrhœa in the mothers, not more than 20 per cent. of whom show symptoms of acute disease at or about the period of parturition. The point is of great importance, since one of the grounds of opposition to prophylactic treatment is that there is no necessity for its routine employment, because comparatively few women present signs of obvious gonorrhœa during labour. Thus, Horrocks (8) in an important

lecture on the instruction of midwives, says :—" What should be done is to find out if the mother has any yellow or green discharge from the vagina, or if she has had such a discharge recently, whether her water scalds her, whether the skin about the vulva and neighbouring parts of the thighs is reddened, particularly whether any pus can be squeezed from the urethra. *If none of these things are found, then it is to be assumed that the mother is healthy and the child's eyes are to be left alone accordingly.*" The italics are the reviewer's, who holds that such teaching is misleading, since it tends to minimise the importance of latent gonorrhœa.

Apart from exceptions, it may be said that ophthalmia neonatorum occurs in two forms, a severe and a mild form, and that the first is usually due to the gonococcus, the second usually to other organisms. As the result of the collection of 1,829 cases of ophthalmia neonatorum by various authors, Stephenson arrives at 64·56 as the percentage in which the gonococcus was found. In 15 per cent. there were negative bacteriological findings, and some of these cases, Stephenson thinks, may be due to syphilis. Wharton (*loc. cit.*) made a careful investigation of 100 cases. The results were as follows :—gonococcus, 75 per cent. ; pneumococcus, 5 per cent. ; staphylococcus pyogenes aureus, 3 per cent. ; Koch-Weeks' bacillus, 1 per cent. ; negative, 16 per cent. Other organisms which have been found in ophthalmia neonatorum are bacillus coli, streptococcus pyogenes, Klebs-Loeffler bacillus, micrococcus luteus, staphylococcus pyogenes albus, Morax-Axenfeld bacillus (Mayou, *loc. cit.*).

The onset of the disease corresponds, as a rule, to inoculation soon after birth, and takes place within four days. There are two principal exceptions, namely, cases which occur earlier, as, for instance, " at birth," and those which occur later. The latter are secondary infections, if gonococcal, or else they are due to organisms other than the gonococcus (Stephenson). Mild affections occurring in the early days of life are rarely due to the gonococcus, but are most often due to the Koch-Weeks' bacillus, bacillus coli, micrococcus urethræ, or one of the pyogenic cocci (Harman, *loc. cit.*).

Those which occur earlier require more special attention.

Ante-partum ophthalmia.—Stephenson clearly shows that ophthalmia due to infection before the commencement of labour is much commoner than has been supposed. The fact that such ante-partum infection does sometimes occur has, indeed, been known for a very long time, and cases have been published under the designation " congenital ophthalmia." In addition to other cases, Stephenson gives a table of nineteen personal observations. Of these ten (52·63 per cent.) were gonococcal, two (10·53 per cent.) were pneumococcal, five (26·32 per cent.) gave negative findings, one was due to bacillus coli, and one to bacillus pyocyaneus. Ante-partum ophthalmia he defines as " an inflammatory

affection of the conjunctiva produced while the fœtus was still in the uterus by the infection of a micro-organism, the incubation period of which has partially or completely elapsed before birth" (Stephenson *loc. cit.: see* also THE OPHTHALMOSCOPE, April, 1906). Twenty-four hours is taken as the minimum period of incubation of the gonococcus, and cases of ophthalmia which develop within that period are classed as due to ante-partum infection. The evidence from such cases, and from those in which, at birth, the eyes have actually been destroyed by an inflammation which has already run its course, makes it certain that intra-uterine infection can take place. The really interesting question is "*How* does the infection occur?"

It is certain that in a proportion of cases—for example, 36·61 per cent. of 105 cases collected by Stephenson—there has been premature rupture of the membranes, so that, through digital examination, douches, etc., it has been possible for micro-organisms to reach the fœtus. The majority of cases, however, do not admit of this explanation. In these it is necessary to assume, since the membranes remained intact until shortly before birth, either local intra-uterine infection or systemic infection. The arguments *pro* and *con* systemic infection are somewhat too long to set down here, and indeed the premises seem barely sure enough for the foundation of a conclusion. It is better to assume, with Stephenson, that in these cases "a slight injury to the membranes, short of actual rupture, or a detachment of the amnion from the chorion, or a patulous condition of the os before pregnancy may determine access of micro-organisms."

Secondary infection.—It is probably unnecessary to try and enumerate all the possible ways in which an infant, having safely come through the ordeals of birth and bath, may get its eyes (or, for the matter of that, its vagina, if a female) infected with pus containing gonococci or other organisms. The principal factors are carelessness and uncleanliness on the part of the mother or her attendants. Wharton (*loc. cit.*) says that the resulting inflammation is seldom so virulent as in primary infection; but Stephenson holds that if the secondary case be due to infection with the gonococcus it may be "quite as formidable as a primary infection by the same organism."

The symptoms of the disease need not detain us. It is now recognised that one eye may alone be infected, or may be infected primarily, while the other is infected secondarily. Harman (*loc. cit.*) had 13 unilateral cases out of 188; ten were left-sided and three right-sided. Harman ingeniously suggests that since the left occipito-anterior is the common presentation, and since delivery is, in this country, usually carried out with the mother lying on her side, the child's left eye may be longer exposed to the influence of infective material on the mother's thigh. He suggests that statistics on this subject from the

continent of Europe, where delivery is chiefly in the dorsal position, would be interesting. It is, however, doubtful if Harman's preponderance of cases in the left eye can be proved to be more than a mere coincidence.

Complications and sequelæ.—The *complications* of gonorrhœal ophthalmia are (Stephenson) tenderness and swelling of the preauricular gland, abscesses of the eyelids, orbital cellulitis, interstitial keratitis, infection of other mucous membranes (vulvo-vaginitis, gonorrhœal stomatitis and rhinitis), arthritis, infection of serous membranes, and general sepsis. The last is very rare. Seeligsohn, Panas, and Terson have all reported cases in which the lacrymal gland was infected (Mayou, *loco citato*). These appear, however, to have been complications not of gonorrhœal ophthalmia, but evidences of systemic gonorrhœal infection. As regards arthritis, it was shown by Clement Lucas, in 1885, that infantile ophthalmia might be complicated with arthritis. One of the larger joints, as the hip, knee, ankle, elbow, or wrist, is specially liable to attack. More than one joint may suffer from synovitis, which seldom ends in suppuration. The reviewer has recently seen a case, as yet unpublished, of multiple suppuration of joints in the practice of Dr. Leslie Buchanan. The *sequelæ*, immediate and remote, are mainly the result of more or less severe corneal ulceration, and are too well-known to require enumeration. Attention may be called, however, to the scarring of the conjunctiva, described fully by Stephenson in the *Transactions of the Ophthalmological Society of the United Kingdom* (1902), which often remains as permanent evidence of the disease.

The **diagnosis** essentially depends upon the bacteriological examination of the pus. Disease of the lacrymal sac, not secondary to ophthalmia, must be borne in mind. This condition is due to delay in the elaboration of the nasal duct, to blockage with inspissated material, or to folding of the mucous membrane, followed (whatever be the cause of the obstruction) by septic infection. The rare cases of streptococcic and Klebs-Loeffler ophthalmia should be remembered in connection with examinations of the pus, as these require serum treatment (Stephenson).

With regard to **prognosis**, there is one rule which (although it must not be considered by any means as absolute) has arisen from the experience of many workers, from the experience of all of us in fact, namely, that if the cornea be clear when the baby first comes under efficient treatment it will not become affected subsequently. Medico-legally, there is an objection to admitting any such rule, for it does not follow, should the eye go wrong in such a case, that the practitioner has been at fault.* Some corneæ, indeed, will suppurate in spite of the most skilful treatment.

Prognosis in general is influenced by such factors as the

*Schanz (*Münch. med. Wochenschrift*, No. 47, 1907) has quoted a case in which damages were claimed from a medical man under such circumstances.—Editors.

nutrition of the child and of the mother, the presence or absence of syphilis in the infant, the stage of the disease at which treatment is commenced, the size of the palpebral fissures (an extra small fissure being unfavourable, although it must be remembered that the infantile fissure is always small), and the nature of the infection.

On this last point there is some difference of opinion, for while the majority of ophthalmologists hold that the cornea is most likely to be affected in a gonococcal infection, Chartres believes that the severer types are those where streptococci occur alone or in association with gonococci, and Chibret that danger to the cornea proceeds from the association of gonococci with staphylococci and streptococci (Stephenson).

Prevention.

Up to this point the task of the reviewer has been comparatively easy, but when we come to the question of prevention we find differences of opinion among medical men as to what steps ought to be taken towards the prevention of a disease which, at any rate in most cases, implies immorality on the part of at least one of the parents. Such differences of opinion, in so far as practitioners of good education and standing are concerned, probably depend, not upon real personal disagreement as to what is ideal, but upon the amount of interference which they consider the public—that is, their own particular patients—will put up with. How few medical men would theoretically and of their own inner conscience object to universal prophylaxis and to the notification of ophthalmia neonatorum, yet how many hundreds must object to these measures because of the fear of offending their patients! Is it not probable that every oculist approves of the principle, at least, of universal prophylaxis, while the majority of obstetricians and general practitioners, who know less of the disease but more of their patients, do not approve of it? With the latter it is probably not in reality a question of principle, but of expediency.

It is a whole century since Benjamin Gibson, of Manchester, wrote the following words as to measures to be taken for the prevention of the disease:—"First, to remove, if possible, the disease in the mother during pregnancy; second, if that cannot be accomplished, to remove artificially as much of the discharge as possible from the vagina at the time of delivery;' and, third, to pay, at all events, particular attention to the eyes of the child by washing them immediately after delivery with a liquid calculated to remove the offending matter or to prevent its noxious action" (quoted by Stephenson).

As is well known, however, it is to Credé (1881) that we owe the most certain of the prophylactic measures for gonorrhœal ophthalmia of the new-born, although it is admitted that the Credé plan, while it is a specific in the case of infection with

the gonococcus, is not so in the case of infection with some other organisms capable of producing ophthalmia neonatorum. This fact, indeed, namely, that such prophylactic treatment is not a *certain* preventive of ophthalmia, forms one of the arguments of those who oppose universal prophylaxis.

But let us first enquire what proposals have been made for the prevention of ophthalmia. The two most important are: (1) prophylaxis as regards the child's eyes and the condition of the maternal passages, (2) compulsory notification of the disease. To these Stephenson adds: (3) the better instruction of medical students and midwives; (4) the education of the public as to the danger to sight involved in this disease when untreated; (5) the appointment of an ophthalmic surgeon on the staff of every maternity hospital; (6) the keeping and publication of records with regard to ophthalmia in all public institutions; and (7) the gratuitous distribution of an efficient solution for prophylaxis.

Prophylaxis as regards the management of the child's eyes.

Credé's method consists in wiping the child's eyes with clean linen and ordinary water, and then opening the eyelids a little, and dropping in one drop of 2 per cent. solution of silver nitrate. By this method Credé himself reduced his percentage of cases from 13·6 to practically zero. In three years, out of 1,160 children born alive there was one case of ophthalmia (Stephenson *loc. cit.*, p. 163).

At the present time, with only partial adoption of the Credé method, actual or modified, the percentage of ophthalmia to total births has been estimated by Harman at 1 per cent. for London. In 700 births in which prophylactic measures had been adopted—though only the genuine Credé procedure in a few cases—Harman found 0·57 per cent. of purulent conjunctivitis.

There can be no doubt whatever, from various statistics, as to the success of Credé prophylaxis, but objections have been raised to its routine employment; weaker solutions of nitrate have been largely employed; and other chemicals have been used instead of silver nitrate.

The objections to the Credé method as a routine method in all births are as follows:—

(1) The use of 2 per cent. silver nitrate is often followed by a mild catarrh of the conjunctiva which may be mistaken for commencing ophthalmia and be treated by further use of silver nitrate (Harman *loc. cit.*).

Evans (*loc. cit.*) considers that this is the only valid objection to the Credé method. Most ophthalmic surgeons are probably agreed that even this objection, standing by itself, can hardly weigh against the advantages of the method.

(2) Hæmorrhage from the conjunctiva has occurred after the application of 2 per cent. nitrate. But conjunctival hæmorrhage

occurs in new-born children sometimes, apart from any application to the eyes. Stephenson seems to hold that probably there is no causal connection at all.

(3) Corneal opacities or ulcerations are said to have followed Credé procedure. In answer to this, many of the recorded cases have suffered from an over-severe application of nitrate of silver, *i.e.*, the true Credé method was *not* employed (Stephenson).

(4) The nurse or midwife may not be competent to use the method correctly.

(5) The method does not always prevent the development of ophthalmia. This is true, since ante-partum infections and secondary infections are not influenced by one drop of silver nitrate solution at birth, and since those infections which are not gonococcal may not be destroyed.

(6) The objection of the general practitioner, that ophthalmia neonatorum is a rare disease in private practice, and that it is quite unnecessary to use routine prophylaxis, more especially since the practitioner may often be aware of the presence or probable presence of gonorrhœa in his patients, and thus may use his discretion as to prophylaxis in certain cases.

(7) The sentimental objection, more especially to the proposal to make the Credé method compulsory by law. Harman points out that such compulsion "would dispel any ignorance as to the nature of the contagion to be combated, and the vast majority would strenuously resist a measure proposed for the safety of the few to the branding of all; the measure would be inoperative, and not only so—the use of the method as at the present time would be stopped."

(8) The objections which are based upon prejudice, brought about by ignorance as to facts which have been proved, upon an exaggerated idea of the supposed harm likely to be done to the eyes by the Credé method, or perhaps upon misleading statistics.

If we admit that the principal *real* objection to the Credé method—*i.e.*, the instillation of one drop of 2 per cent. silver nitrate—is the occurrence of catarrhal symptoms, can we not modify the method? That is what has been very largely done. Many chemical agents have been employed as substitutes for 2 per cent. silver nitrate, and on this subject Stephenson's table on page 206 may be consulted. From that table it appears that out of 23 different applications (including 2 per cent. and weaker than 2 per cent. silver nitrate solutions, and 2 per cent. silver nitrate ointment) only four have been used in more than 10,000 births. The percentages of ophthalmia following the use of these four are: silver nitrate 2 per cent. solution, 0·703 per cent.; silver nitrate solution weaker than 2 per cent., 0·423 per cent.; corrosive sublimate solution from 1 in 1,000 to 1 in 10,000, 0·4069 per cent.; 5 per cent. citric acid solution, 1·10 per cent. It is an outstanding fact that in 36,132 births, silver nitrate weaker than 2 per cent. was used and gave a lower

percentage of ophthalmia, *viz.*, 0·423, than did 2 per cent. silver nitrate, although it must be admitted that the number of births concerned in the latter case is more than double that in the former, namely 76,452.

Even when contrasting 1 per cent. silver nitrate alone with 2 per cent. solution we find an incidence of 0·628 per cent. of ophthalmia in 18,393 births (Stephenson, page 189). We are therefore justified in saying that a 1 per cent. solution is at least as protective as a 2 per cent. solution, while it is acknowledged by everybody to be less irritating.

Corrosive sublimate has certainly been largely used and seems to be very efficacious. As to Queen Charlotte's Hospital, London, Stephenson says, 'In Queen Charlotte's Hospital out-door department the baby's eyes are washed as soon as possible after birth with wool and sublimate 1 to 4,000, and after the bath has been given two or three drops of the same solution are put into the eyes." Argyrol and protargol also have their advocates. Argyrol is certainly non-irritating, although recent laboratory work has tended to show that it is not a germicide as regards certain micro-organisms. Yet it gives, when used as a prophylactic, a percentage incidence of only 0·25 on 6,984 births. Protargol, on 7,383 births, has an incidence so low as 0·027 per cent. Evidence appears to be accumulating that protargol in solutions from 10 per cent. to 20 per cent. and argyrol in solutions of 20 per cent. are excellent prophylactics. They should be freshly prepared before use. Rosa Ford (9) says: "Protargol must be prepared with *cold* water. The best method is to dust the powder on to as large a surface as possible of the required amount of distilled water, and leave without stirring. It will dissolve in about half-an-hour." Protargol is not quite so unirritating as argyrol, but much less irritating than silver nitrate. Both are capable of producing marked silver staining of the conjunctiva, but not, of course, when applied in this way.

There is one objection to the inclusion of solutions of argyrol or protargol in the physician's or midwife's bag, which the reviewer does not remember to have seen stated, and that is their resemblance in colour to solution of ergot. It might easily happen that the one should be substituted for the other under conditions of urgency.

Apart altogether from the routine application of solutions, prophylaxis is more or less efficiently carried out by preventing infective material from reaching the conjunctiva after birth. Such measures, alone, are useless if actual infection has already taken place, but will doubtless do a great deal towards the reduction of the total number of cases of ophthalmia. They consist in careful wiping of the child's eyelids with sterilized gauze or with boric swabs; drying of the child's hands and arms to prevent it infecting its eyes, or bandaging the eyes until such time as it can be attended to; special care that none of the bath

water splashes into the eyes, and washing the face with a separate supply of water; and, finally, taking every care that the child does not subsequently become infected from its mother, from nurses, or from other patients. If to such measures be added the use of 1 per cent. nitrate of silver in any case where there is a suspicion of gonorrhœa in mother or father, there is at least every probability that the child's eyes will be safe. Such seems to be the feeling of many obstetricians at the present time, but it must not be forgotten that no matter what the social status of the parents, undetected latent gonorrhœa may be present (Stephenson). This risk must be taken.

Prophylaxis as applied to the mother.

Another prophylactic measure is the cleansing of the vulva and vagina of the mother, details of which need not be given here, although it is proper to remark that douches employed during *pregnancy* are credited with the destruction of the normal germicidal action of the vaginal secretion. Mayou (*loc. cit.*) says that it is advisable to avoid their use, except in cases in which it is known that there is a pathological discharge. Pathological conditions of the vagina should be treated during pregnancy.

Rapid delivery is advocated by Mactier ([10]), provided it can be done without laceration of the maternal parts. The same author advocates the use of a vaginal tampon, soaked in lactic acid, for half-an-hour before the os dilates in cases where gonorrhœal infection is suspected, and, further, that the bladder should be emptied with a catheter, lest the gush of urine should carry infective bacteria into the vagina or on to the child's face.

The reviewer in the course of his reading on the subject of prophylaxis is driven to certain conclusions on the evidence before him:

(1) The method of Credé, if carried out correctly, in every child born, and followed by prevention of secondary infection, would practically stamp out the disease.

(2) Catarrhal symptoms would appear in many cases.

(3) Such catarrhal conjunctivitis, provided that its cause is fully recognised, seems a small price to pay for the advantages gained.

(4) If one per cent. silver nitrate were used instead of two per cent. there would be less catarrh and equal protection.

(5) Simple cleansing methods of prophylaxis, without the use of germicidal applications to the eyes, are nearly as good as the Credé method, provided: (a) the details are faithfully and intelligently carried out; and (b) infection has not already taken place.

(6) Most of the objections to routine use of a germicide depend upon (a) prejudice; (b) sentiment such as is exemplified by a recent reference to "red and crying atoms of humanity;" (c) dread of the inference likely to be drawn by the mother and her friends and attendants. As has been indicated previously, this is probably the real stumbling-block in the way of the adoption of universal prophylaxis.

(7) Whatever may be done in private practice, the Credé, or modified Credé, method should be carried out in public institutions.

Compulsory notification.

This review has already exceeded the limits intended by the writer, and it is impossible to take up in detail the views of Stephenson, Harman, Evans, and others on the subject of notification. However beneficial notification might be, there is at present no provision for treating the notified cases, even were ophthalmia neonatorum included in the list of notifiable diseases. Yet some good might come of the mere notification, as Harman says, because "when a doctor or midwife has to notify a mishap in his or her practice there is a great stimulus to the exercise of the most scrupulous care in preventing the mishap, or in checking it at its slightest indication. We are still human, and rewards and punishments still have a subtle influence upon our action."

As probably bearing upon this question, it may be noted that in the Section of Ophthalmology of the British Medical Association held at Exeter in 1907, the following resolution, proposed by Sydney Stephenson, was unanimously passed :— "*That in the opinion of the Section of Ophthalmology, the time has come when action should be taken by the British Medical Association towards the prevention of ophthalmia neonatorum.*" A similar resolution was passed in the Section of Diseases of Children, and a Sub-Committee of the Science Committee of the British Medical Association has been appointed to consider it (*see* THE OPHTHALMOSCOPE, March, 1908).

Not a great deal need be said about **treatment** in an ophthalmic journal. Every ophthalmic surgeon knows that the most important point is day and night attention and the prevention of pus-collection in the conjunctival sac. The local applications of protargol, argyrol, or nitrate of silver are matters of detail in method. There seems to be a consensus of opinion that protargol is the most reliable of the organic silver preparations. Argyrol is largely used in spite of the indictment that it is not germicidal, because, clinically, it is found invaluable. The use of the polyvalent, antistreptococcic serum of Torrey has seemed to Stephenson to be useful in a few cases in which it has been tried, but this author has nothing very positive to say about it in gonococcal ophthalmia. On the other hand, ophthalmia due to streptococcic and Klebs-Loeffler infection should naturally be treated by the appropriate serum. In early corneal ulceration, or in threatened ulceration, Stephenson advocates the frequent use of physostigmine sulphate, 2 grains to the ounce, in preference to atropin. Severe ulcerations are treated by him either by the application of acidum carbolicum liquefactum, B.P., or by putting the baby under an anæsthetic, removing discharges with hydrogen peroxide, and applying the galvano- or thermo-cautery freely to the ulcer and its infiltrated edges.

If one eye only be affected it will probably be admitted by all that it is right to use a silver salt in the sound eye in a prophylactic manner.

Harman says that "in all cases of inoculation with the gonococcus the child should be taken into hospital to ensure cleanliness and efficient treatment." This is probably a counsel of perfection. Harman has found that if silver nitrate solution is prepared with 20 per cent. glycerine in distilled water it is much less irritating, and appears to have increased penetrating power.

As regards the chronic hypertrophy of the conjunctiva which may persist after the acute stage has passed, Stephenson and Mactier are agreed that it should be treated with zinc salts. The former holds that there is secondary Morax-Axenfeld infection in most of these cases.

Conclusion.

The reviewer cannot help thinking—what is possibly very obvious—that a great deal of the blindness from ophthalmia neonatorum would be prevented if: (1) the general public would act in the manner suggested by the card issued from the Sheffield General Infirmary, namely:—"When baby's eyes begin to look red and run with matter, take it at once to a doctor. It is very dangerous, and if not treated properly one or both eyes may be lost" (quoted by Mactier, *loc. cit.*); and (2) every doctor to whom a child is thus taken were thoroughly educated in such proper treatment.

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FIG. 1

Filtering cicatrix through thinning of the sclera

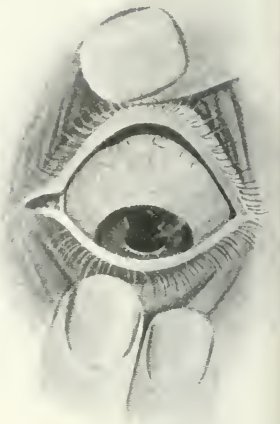

FIG 2.

Filtering cicatrix through thinning of the sclera.

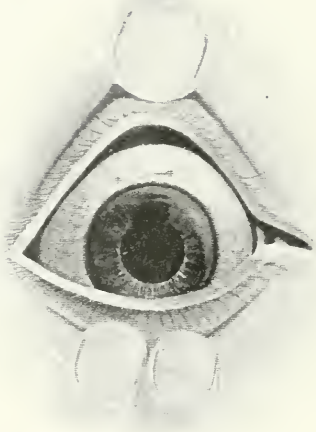

FIG. 3.

Filtering cicatrix through thinning of the sclera.

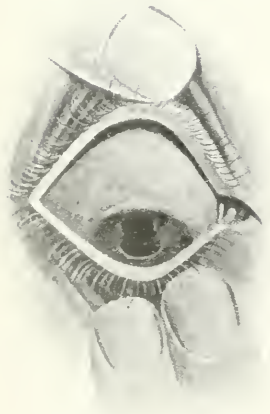

FIG. 4.

Filtering cicatrix. First grade of sub-conjunctival fistulette.

FIG. 5.

Filtering cicatrix. Sub-conjunctival fistula in the internal angle the cicatrix

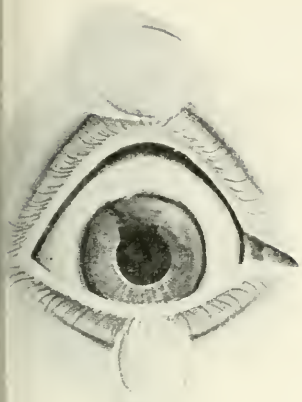

FIG. 6.
Filtering cicatrix. Fistula and ampulliform elevation.

FIG. 7.
Filtering cicatrix. Fistula and ampulliform elevation.

FIG. 8.
Filtering cicatrix with fistula and ampulliform elevation.

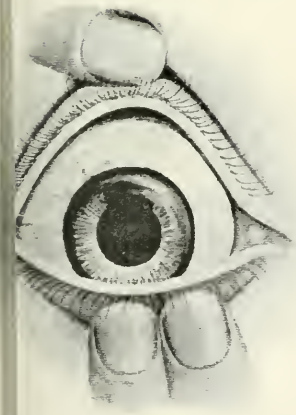

FIG. 9.
Filtering cicatrix with fistula and ampulliform elevation.

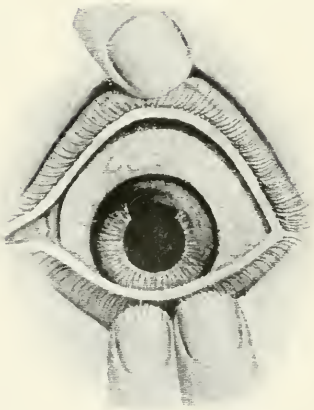

FIG. 10.
Filtering cicatrix. Fistula and ampulliform elevation.

TRANSLATION.

ON THE FILTERING CICATRIX IN THE CURE OF GLAUCOMA.*

BY

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In this communication we shall discuss the following four points :—I. The utility of the filtering cicatrix, and the impossibility of obtaining the latter without scleral resection; II. the definitive formation of such a cicatrix after the performance of the operation devised by us; III. the different forms of the filtering cicatrix; and IV. the causes which lead to variations in the form and external aspect of the filtering cicatrix.

I.—The utility of the filtering cicatrix.

Is the filtering cicatrix useful in the treatment of glaucoma? This question must be answered in the affirmative, no matter what views we may hold with regard to the pathogeny of the disease. If one believe that glaucoma is the consequence of too much fluid, it can scarcely be denied that its evacuation will be useful. If one believe that glaucoma results from retention of fluid secreted in normal quantity, it must be equally serviceable to clear the chief outlet by means of which the fluid escapes. It is, indeed, probable, and for that matter, to my mind, certain, that the primary cause of glaucoma is hypersecretion, due to: (1) a nervous disorder (excitation of the sympathetic); and (2) an alteration in the blood or the vessels (sclerosis). One of these factors may suffice, but when they act together, the effect is so much the greater. That is the principal cause, to which there is speedily added another of capital importance, namely, the obliteration of the excretory channels—closure of the angle of the anterior chamber, *soudure* of Knies, obliteration of the lymph-canals surrounding the vasa vorticosa, strangulation by the sclera, hardened in those who suffer from rheumatism, sclerosis, and so forth.

In every case, whatever be the cause of the glaucoma, a filtering cicatrix giving issue to fluid will be curative, as much as any operation can be, since if there is glaucoma there is hypersecretion or retention, and in either hypothesis it is equally useful to evacuate the fluid which encumbers the eye. This is the reason why almost all the interventions devised for the relief of glaucoma aim at facilitating the excretion of fluid—iridectomy, sclerotomy, and all similar and substitutory operations have been recommended in the hope of obtaining this result.

Undoubtedly, all operators do not agree upon the way in which this or that operation acts upon the diseased process.

*Translated from the *Archives d'Ophtalmologie*, février, 1908.

We know that certain surgeons explain the action of iridectomy otherwise than by the filtering cicatrix. We are familiar with the theories of Abadie (*Archives d'ophtalmologie*, 1897), Jocqs (*La Clinique Ophtalmologique*, novembre, 1900), Rochon-Duvigneaud (*La Clinique Ophtalmologique*, 1901, p. 17), and some others, although, candidly, we cannot understand why they seek the reduction of tension in any cause other than the state of the cicatrix, seeing that the permeability or otherwise of the latter explains perfectly successful as well as unsuccessful results.

In acute glaucoma, iridectomy by the rapid evacuation of liquid that is in excess, causes the œdema of the uveal tract to disappear, by means of which Nicati (*Société de Biologie*, 1890) and Albert Terson (*Societé française d'ophtalmologie*, mai, 1901) have explained this variety of glaucoma. Cicatrisation of the wound takes place under pressure, with the consequence that the wound becomes ectatic enough to allow of the filtration of fluid. The cicatrix is the more permeable, since the operator, despite himself, often leaves a bit of the iris caught up in the wound, thereby separating the lips of the latter.

In irritative and chronic glaucoma, with raised tension, it is also the cicatrix that explains the success, longer or shorter, of the iridectomy. The eye being under strong pressure, the coaptation of the wound is imperfect, and even when the iris is nowhere incarcerated, the cicatrix becomes somewhat thinned and ectatic. It is more or less "filtering," exactly in proportion as the lips of the wound are separated at the moment when cicatrisation takes place.

In chronic glaucoma, with moderate tension, the surgical cicatrix becomes hardened and thereby loses the possibility of allowing fluid to escape. In cases of chronic glaucoma, where hypertension is feeble and inconstant, the scleral incision closes hermetically from exact coaptation in the first few days.

From what has been said, it follows that the filtering capacity of the cicatrix depends directly upon the degree of hypertension of the eye that has been operated on, and that the iridectomy will be so much the more efficacious the more distended the eye. The operation yields definitive results in acute glaucoma; good results of a more or less lasting character in glaucoma, with more or less hypertension: but it is without value in cases where hypertension is little pronounced. Is it not evident that the value of the operation is exactly proportional to the hypertension of the eye, to the separation of the lips of the wound, and to the variable degree of ectasia that results from the last-named?

Since the results given by iridectomy can be readily understood by what happens in regard to the cicatrix, I fail to comprehend why we should go in search of doubtful, uncertain, and hypothetical explanations.

The conclusion follows, that the best operation for glaucoma is precisely that which allows of the freest possible escape of the intra-ocular fluids.

v. Graefe understood the usefulness of the filtering cicatrix, and he explained the good results in many of his cases by its action, but to de Wecker attaches the credit of having brought into prominence the value of this cicatrix (*Société française d'ophtalmologie*, 1901, p. 34). When one studies with care the admirable communications of our regretted colleague, it does not take long to perceive that, while demonstrating the advantages of this cicatrix, he places in relief not only the difficulty but also the impossibility of obtaining filtration in the great majority of cases.

Let us see what de Wecker's principal publications say on this subject. "Study with the *loupe* of young subjects who have been operated on for glaucoma constantly shows differences of level where the least prominent parts affect the crateriform character with a darker and thinner base" (*loco citato*). For de Wecker that constitutes the type of the filtering cicatrix; the cystoid cicatrix is for him an insufficient cicatrix, since it includes more or less marked entanglements of the iris, and these entanglements entail, among other inconveniences, that of suppressing filtration at their site. He therefore thinks, rightly enough, that one should not endeavour to obtain a filtering cicatrix by means of a prolapse of the iris, as has been done by Bader, Herbert, and lastly, by Holth, of Christiania.

The filtering cicatrix obtained without entanglement of the iris gives an excellent result, and everything said about it by v. Graefe and by de Wecker still remains true. But when one reads communications about this question, we are struck with two main facts: (1) when there is no entanglement of the iris, a filtering cicatrix is produced only when the tension of the eye is notably raised; (2) when the cicatrix is produced in such eyes, it loses, little by little, its power of filtration, as it grows older and harder.

This is equivalent to saying that the filtering cicatrix cannot be obtained at all in simple chronic glaucoma, while the function of the cicatrix obtained in chronic glaucoma with hypertension disappears more or less quickly with the lapse of time.

The proof of what I say is to be found in de Wecker himself:—"It is to be remarked that when the wound cicatrises under normal tension, a rigorous consolidation of the lips of the section takes place; that is what happens in cases of simple chronic glaucoma, and the action of iridectomy under such circumstances becomes less and less efficacious."

It is somewhat singular that in these conditions the idea of excising a scleral flap did not occur to the mind of our eminent *confrère*.

Moreover, de Wecker in another communication (*Annales d'oculistique*, 1905, p. 131, T. CXXXIV), justly remarks that

the effects of iridectomy diminish with time, inasmuch as the cicatrix contracts, and thereby becomes less efficient as a filter. That is the reason why cicatrisotomy or ouletomy has been advised, and also why Dianoux (*Annales d'oculistique*, fèvrier, 1905) and Wickerkiewicz (*Annales d'oculistique*, 1905, p. 131, T. CXXXIV) have recommended massage, the former after sclerotomy and the latter after iridectomy. The advice is good; but massage has no action except on recent cicatrices, while the section of a cicatrix has, ere long, the same sort of effect as the former operation.

Much has been written to prove that there is no filtration at the site of old scleral and corneal sections. The experiences of Schoeler (*Berliner klin. Wochenschrift*, 1881, No. 36) on rabbits, histological examinations, and numerous pathological sections prove that there is nothing to hope from any kind of scleral section as regards the lasting filtration of the ocular fluid. Our own experiences upon rabbits have led us to form similar conclusions.

Experiments on animals do not allow us to reach conclusions as to what passes in man whose eye is hypertended, since the animal's eye is under normal tension. At the same time they show what takes place in simple chronic glaucoma, for in the rabbit the lips of the wound become hermetically sealed.

What has been said so far may be summed up in two sentences :—

(1) The filtering cicatrix resulting from iridectomy is the direct outcome of the elevation of tension: when tension is normal, the cicatrix does not filter at all; it filters for a longer or a shorter time according as the tonus is more or less raised.

(2) When a filtering cicatrix is obtained in a hypertended eye, it loses its properties in proportion as the cicatricial tissue contracts and hardens; from this it follows that the value of iridectomy (which amounts to nothing in chronic glaucoma with feeble and intermittent tension) has a transitory value only in the other forms of chronic glaucoma.

Iridectomy has no value, or but a passing one, because the lips of the wound fall into apposition, either immediately after the incision or more or less quickly after the section has been made. Diæresis must be replaced by exeresis, since by the former it is impossible to produce a definite filtering cicatrix, which, on the contrary, one can get readily by exeresis of the sclerotic.

In that lies the end and the aim of my operation for glaucoma.

My operation of sclerecto-iridectomy (for description *see* THE OPHTHALMOSCOPE, September, 1907) has the primary advantage of opening up a communication between the choroidal space, on the one hand, and the aqueous chamber, on the other. It satisfies, therefore, the wants of those who believe that chronic glaucoma largely depends upon the obliteration of that space. In the second place, it does away with the obstruction

of the angle of the anterior chamber, when such exists ; and, lastly, it establishes a communication between the aqueous chambers and the peri-choroidal space and the meshes beneath the conjunctiva.

A similar scleral incision gives but a fleeting result, because the lips of the scleral wound unite by first intention, and thereby effectually block the escape of more fluid from the eye. On this point we have the assurance of de Wecker, as already quoted in this article.

Thanks to exeresis of the sclera, we need no longer fear occlusion of the lips of the wound, even when tension is normal. If to that we add that the lips of the wound are unable to pout, the scleral tissue being immobilised in its form, one can understand that the orifice becomes transformed naturally into a tiny fistula, the wall of which is perpetually swept by the excreted liquid.

We may conclude that most surgeons who have devised operations for the cure of glaucoma have aimed at facilitating the excretion of liquid, and that most of them have endeavoured to obtain a filtering cicatrix. This they have not managed to get at all in simple chronic glaucoma, while in chronic glaucoma, accompanied by hypertension, they have obtained it only in an imperfect and non-lasting manner.

In that way we explain surgical failures in the treatment of glaucoma. We shall endeavour now to show that our operation is capable of yielding in every case, and without danger, the filtering cicatrix so necessary to cure.

II.—The formation of a filtering cicatrix after the operation of combined iridectomy and sclerectomy.

Historical researches will doubtless one day explain exactly how the cicatrix formed after my operation comes about. Such studies will be made upon eyes removed years after the operation has been performed, or upon the eyes of animals that have been subjected to experimental study. Chance will probably place specimens of the first class in our hands. As to the second possible source of material, we shall be able before long to study the eyes of dogs on which our operation has been performed recently. In the meantime we will place before our readers the different type of filtering cicatrix obtained by the procedure.

We employ here the expression "filtering cicatrix," because it is the only one which agrees with the anatomical state of the region operated on and with the results obtained. We do not understand the objections offered to this terminology, coined by de Wecker, even at the beginning of his memorable work. The operation consists in the formation of a breach accompanied by a wound. As this wound heals, it is difficult to deny that it cicatrises, and, as elsewhere, the cicatrix thus formed allows the intra-ocular fluids to escape more readily than usual. It is, therefore, impossible to refuse to add the epithet "filtering" to the term "cicatrix."

We believe, then, that the term should be retained, and that it may conveniently be applied to all the results given by the combined operation of iridectomy and sclerectomy. These results differ according to the cases, to the extent of the sclera excised, and to the state of the eyes operated on. They also differ with regard to the appearance of the cicatrix as much as they do with regard to its intimate structure. All agree, however, in this, namely, that the intra-ocular liquid passes away more readily through the breach in the sclera than it did before the operation.

Doubtless, it would be most interesting to demonstrate anatomically and experimentally that such a cicatrix allows of the filtration of fluids, the more so since, as already stated, such a property has been denied to corneal and scleral cicatrices.

Henderson, of Nottingham, has written an interesting paper for the purpose of demonstrating that incisions in the eyeball close in such a way that no issue of liquid is possible, and *à propos* the communication which we made at the Oxford Ophthalmological Congress (July, 1907), he insisted upon this impossibility.

Our English *confrère* is right. We are in accord with him as to what follows a simple section of the sclerotic. de Wecker, it is true, attempted for thirty years to attain a filtering cicatrix without success, and Dianoux, in order to secure an appreciable and prolonged escape of liquid, was obliged to practise massage daily. The massage acts as long as the walls of the incision are but slightly adherent, but after some weeks or months, it has no longer any effect. Henderson is right: after none of the known means, can we, by incision of the globe, obtain a persistent and filtering cicatrix.

Such a cicatrix can be obtained only by making not a diæresis but an exeresis of the sclera. It is another thing to make in the wall of a pocket distended, as is the eyeball, an incision or an excision. If one takes a hollow ball of caoutchouc and makes in it an incision of some millimetres, the ball retains its shape, and the lips of the cut fall into such an exact apposition that the line of incision can scarcely be recognised. When one lip of the incision is excised, however, the tonicity of the elastic ball ensures that the borders of the incision remain separated, and renders coaptation impossible.

This is what happens as regards the eye, the more so since the lips of the wound are not able to sprout so as to come into contact one with the other, since we have to do with a loss of substance in the sclera, a fibrous tissue, which does not proliferate. In this way one can understand why a definitive filtering cicatrix is formed at the level of the sclerectomy. This filtering cicatrix is not without analogy with the cystoid cicatrix, so well known to operators, although the analogy is more apparent than real.

The two kinds of cicatrix differ essentially in the following points :—(1) the filtering cicatrix which results from the combined operation of iridectomy and sclerectomy is free from any adhesion to the uveal tract ; (2) the cystoid cicatrix, on the contrary, is always consecutive to an entanglement of the iris.

The entanglement of the iris is the *raison d'être* of the cystoid cicatrix, and it is precisely because the cicatrix involves the uveal tract that it is rightly dreaded both by the surgeon and the patient. At the same time, it must be admitted that it often has a good effect as regards hypertension and glaucomatous relapses. The patients who present a cystoid cicatrix have a normal ocular tension, and in their case the surgical intervention has had a relatively favourable result. Speaking generally, they are better off than those upon whom a very regular iridectomy has been made, for an exact closure of the wound follows the perfect iridectomy, while when the iris is caught up, the lips of the incision gape, and allow the fluid of the anterior chamber ready access to the subconjunctival meshes. The entanglement, however, if it offers the advantage of causing the lips of the wound to gape, also exposes the patient to all the dangers of prolapse of the iris, and all the risks of recurrent inflammations of the uveal tract.

We have recently had under care a woman, both of whose eyes were operated upon for chronic glaucoma by an eminent *confrère*. Her history, which we shall relate briefly, is very suggestive not only as regards the inadequacy of iridectomy, but also as regards the inconveniences of entanglement of the iris. To begin with, the patient complained of her right eye, which caused her much pain, was often reddened, and was almost always somewhat tender. It was on account of this eye that the patient consulted us. The sight of the right eye was two-thirds, while that of the other eye was one-fifth only. As is often the case, the patient did not know exactly which eye she saw best with, and great was her astonishment when she found that the painful eye, the eye of which she complained, was the only one with which she could read. Before operation, the sight of the two eyes had been equal.

The right eye presented an iridic adhesion, together with a small cystoid cicatrix. The left eye showed the results of a very regular iridectomy. In the eye where operation had been perfect, sight continued to decline ; in the other eye, where there was an entanglement, sight remained good, but the patient suffered.

Similar cases are by no means uncommon. A search of our records has brought to light several other instances. There is, however, no need to labour the point.

A cystoid cicatrix obtained at the price of an entanglement of the iris, then, is unwelcome and dangerous, and one should aim at creating a cicatrix fully as filtering as the cystoid one, without the uveal tract participating in its formation.

It is such a cicatrix that we can obtain by our combined iridectomy and sclerectomy. It is far from presenting itself always under the same aspect and form. The next section will, therefore, be devoted to a description of the different kinds of cicatrices that may be met with.

III.—The different forms of filtering cicatrix that may be met with after my operation.

Figures 1 to 10 on the accompanying plates show better than any description how the cicatrices differ. Three chief varieties may be distinguished: (a) thinning of the sclerotic; (b) subconjunctival fistulette; and (c) ampulliform elevation of the conjunctiva.

(a) *Thinning of the sclerotic.*—The sclera is simply thinned when in the course of the operation the scissors remove a part only of the thickness of the fibrous membrane, the slender summit of the scleral *bec de flute*, which the knife cuts in its oblique course from below up and from within out. It is even possible while taking a large shaving from the eyeball that the surgeon may remove only the outer layers of the sclerotic, so that coaptation of the lips of the wound may still occur in the deeper parts of the membrane. The region of Schlemm's canal may thus be deprived of its outer wall, while the internal region remains intact. Under these conditions there can be no free and large communication between the anterior chamber, on the one side, and the subconjunctival spaces, on the other. The sole result of the operation will therefore be to enfeeble the scleral envelope at the level of the filtration-angle.

This result is by no means negligable, since it is certain that the exit of liquid from the eye is thereby largely facilitated. Figures 1, 2, and 3, have been drawn from patients who have all benefited largely from the operation, and in whom combined iridectomy and sclerectomy have given a permanent success.

Bettremieux (*La Clinique Ophtalmologique*, août, 1907*) has recently recommended this weakening of the scleral envelope, without opening of the anterior chamber. It is possible that his proposed grooving of the sclera may be useful, although we are of opinion that in order to be permanently efficacious, it should be followed by the opening of the anterior chamber. It is necessary that for several days after the operation the current of aqueous humour should sweep the wound and thus prevent the conjunctiva from adhering to the sclera and rendering nugatory the loss of substance by organising at this point into true cicatricial tissue, fibrous and resistent.

In order that the scleral breach may produce a useful result, it is necessary that the liquid of the chambers of the eye should push aside the conjunctiva, raising the latter, œdema-like. That result we obtain by our operation. It could also be got by practising the *ab-externo* resection recommended by Bettremieux

*For abstract, *see* p. 400 of present number.

and by adding to it a perforation of the globe at a point so circumscribed as not to allow the iris to become entangled and yet large enough to permit the aqueous humour to pass it abundantly.

One would be able thus to obtain a filtering cicatrix without iridectomy in cases of feeble hypertension, as in simple chronic glaucoma, where iridectomy is often redoubtable enough. The feeble hypertension should allow one to avoid the entanglement of the iris in the little orifice made in the scleral envelope, grooved externally and perforated in a circumscribed point. We have made upon rabbits experiments favourable to this method, and the subject is one to which we shall return in a later communication.

Reverting to the definitive form of the filtering cicatrix, we may say that this form depends not alone upon the way in which the operation is performed, but also upon the state of the eye.

In simple chronic glaucoma the lips of the scleral wound adhere at every point where there is no loss of substance—the opening does not gape. When the operation is performed upon a case of glaucoma, associated with a notable increase of tension, the wound gapes, even when the sclera has not been resected in its whole extent, and in place of a simple scleral thinning, the surgeon assists at the formation of a subconjunctival fistulette. From another cause, it may happen that the scleral resection is not of the same depth everywhere. Thus, for an extent of several millimetres it may involve only the outer layers of the sclera, while the whole thickness of the sclera may be removed elsewhere. This will result in a cicatrix like that represented by figure 5, in which all the temporal part of the section is merely a thinning of the globe, while a tiny fistulous orifice exists at the inner end of the cicatricial line.

(b) *Subconjunctival fistula.*—We speak of a "subconjunctival fistula" when beneath the transparent conjunctiva we see a loss of substance in the sclera, an orifice more or less narrow, usually linear, but sometimes rounded. By this orifice the aqueous humour escapes freely into the subconjunctival spaces. It is a fistula in the literal sense of the word. How does this fistula open into the anterior chamber? To be quite positive on the point histological examinations must be made, but that has not yet been done. There may be at the point of anastomosis in the angle of the iris a lattice-work analogous to that which exists normally in that region; perhaps the endothelium of the anterior chamber lines the walls of the artificial aperture; perhaps nothing of the sort exists. We know only the external aspect of the scleral opening.

When the scleral aperture is very narrow, it often appears under the guise of a small black point, a colouration due to the total reflection of light which occurs at the spot. It must not be thought that the appearance represents any entanglement of the

uveal tract. In order to convince oneself on this point it is merely necessary to examine the eye with good lateral illumination in the dark-room.

Above the subconjunctival fistula, the mucous membrane sometimes retains its regularity and thickness (Figs. 4 and 5); at other times it is raised, tomentous, and irregularly transparent (Figs. 6 and 7). When the fistula is covered with fine and regular conjunctiva, it means that the liquid which leaves the eye is not abundant and that it is resorbed by the subconjunctival meshes soon after its escape, and this again probably depends upon the fact that it passes out under feeble pressure. It is obvious that the amount of fluid and the force with which it is pushed under the conjunctiva will vary with such factors as the state of the eye, the kind of glaucoma, and the degree of hypertension.

Broadly, it will be found that a simple chronic glaucoma, with feeble hypertension, will correspond with the second type of filtering cicatrix, namely, the subconjunctival fistulette.

(c) *Ampulliform elevation of the conjunctiva.*—This, the third variety of filtering cicatrix, is the most common. It is the invariable product of the combination of two conditions:—(1) resection of a piece involving the whole thickness of the sclera, and (2) hypertension of the eye that has been operated on. The first condition places the chambers of the aqueous humour and the peri-choroidal space in free communication with the subconjunctival spaces, and the second ensures that the intra-ocular fluids shall be extruded under considerable pressure.

In this condition there is produced in the thickness of the conjunctiva something analogous to what histologists call *la boule d'œdème* and which they obtain by passing into laminated tissue the contents of a Pravaz syringe (*see* Figs. 8, 9, and 10). The projection, the volume, and the thickness of the conjunctiva are not always the same even in one and the same subject. When the glaucomatous eye, favourably influenced by the filtering cicatrix, has for a long time been the seat of no recurrences of tension, the conjunctival prominence tends to become effaced. When, on the contrary, under the influence of emotion, grief, or of any vaso-motor trouble whatever, hypersecretion is produced, the eye relieves itself by the filtering cicatrix, so that the conjunctiva becomes more swollen, irregular, and tomentose. This we have seen happen to patients who presented a simple subconjunctival fistulette, sometimes covered with flat and regular conjunctiva, and sometimes with prominent and tomentous conjunctiva—that is to say, a cystoid cicatrix. This third type of filtering cicatrix resembles, in fact, a cystoid cicatrix but with this important difference, as stated before, *viz.*, that it is a cystoid cicatrix without entanglement of the iris, and consequently free from danger.

We do not believe that to the third type of filtering cicatrix

there can be attributed the least drawback from the point of view of the nutrition of the eye, of its protection, and of its functions. Four years have passed since we began to operate upon patients by our procedure, and in truth, we have never seen the least damage result from the operation. Those who prate of infection, of inflammation, or of pain, lack the necessary experience. We say now and here, with the certainty that the future will show that we are right, that all the drawbacks of the old cystoid cicatrices were owing to the fact that they included incarcerated iris, and that the absence of this entanglement explains why the cicatrix resulting from our operation is innocent.

IV.—The causes which lead to variations in the appearance of the cicatrix.

The various types of the filtering cicatrix depend upon the way the operation is practised, and upon the degree of hypertension of the eye that is operated on.

The first form (thinning of the sclera) results from this—that the excision has affected only the point of the scleral bevelling, the external layers of the fibrous membrane.

The second type (subconjunctival fistulette) is produced when the whole thickness of the sclera has been excised, and the dimensions of the fistula correspond to the size of the fragment that has been taken away. In order that the filtering cicatrix remain fistulous without becoming cystoid, it is necessary that at the moment of operation the eye shall be little or not at all distended, and that attacks of hypersecretion shall be minimal.

The third type (ampulliform elevation) corresponds to operations in which a large excision has been practised on an eye subject to glaucomatous outbreaks of sufficient intensity to extrude with force intra-ocular fluid under the conjunctiva.

It is important to remark that it is especially the degree of hypertension that decides the form of the cicatrix. When the eye is much distended, the lips of the wound separate even when one contents oneself with sclerotomy, and it is in these cases, and in these cases alone, that de Wecker and his followers managed to obtain permanent filtration. When the eye is less distended, the coaptation of the lips of the wound occurs well, particularly when the surgeon commits the mistake of applying after operation a compressive bandage, which contributes to the closing of the scleral opening. In eyes but little distended, and in those with merely a slight and intermittent hypertension (simple chronic glaucoma) the lips of the wound come into apposition after the sclerotomy. Cases of the last kind are especially those which call for a large sclerectomy. In consequence of the feeble tonus, it may be possible in these cases to dispense with the iridectomy, and to keep the iris in the anterior chamber by the liberal use of

physostigmine. This would be a great advantage. At this moment we are engaged in studying the means of improving our plan in this direction in the treatment of glaucoma.

As regards the extent of the scleral resection, we may formulate the following proposition : the extent of the sclerectomy should be in inverse ratio to the hypertension of the operated eye. Thus, in an eye with tension +3, the wound gapes enough for a filtering cicatrix to be established by simple sclerotomy. If tension be +2, one may content oneself with a small sclerectomy. For an eye with tension +1, and still more so when the tension is normal, a large, a very large, sclerectomy must be made.

We have now finished with the different kinds of filtering cicatrix that may be obtained in the treatment of glaucoma, it being understood that every surgeon executes our operation in accordance with the rules laid down in our former communications. We shall not discuss in this place the question of clinical results, for our views upon this matter are well-known. We can only regret that sclerecto-iridectomy has not yet been performed by a large number of surgeons, because we are convinced that their results will be similar to our own. We do not purpose to set out the results here, but we shall return to that point presently. We purposely allow our cases to accumulate and to become older, so that we may eventually present an imposing collection of figures.

To those who have been good enough to read this communication I will say, in conclusion, that sclerecto-iridectomy yields a filtering cicatrix making a communication between the chamber of the eye and the perichoroidal space and the subconjunctival cellular tissue ; that this filtering cicatrix is capable of doing away with the hypertension of a glaucomatous eye ; and finally, that a glaucomatous eye freed from hypertension is cured, in so far as surgery can cure it.

SYDNEY STEPHENSON.

CURRENT LITERATURE.

NOTE.—Communications of which the titles only are given either contain nothing new or else do not lend themselves to abstract.

I.—PNEUMOCELE OF THE LACRYMAL SAC.

Motais.—A case of double pneumocele of the lacrymal sac. (Observation de pneumocèle double du sac lacrymal.) *Bull. et Mém. de la Soc. française d'Ophtalmologie*, 1907, p. 353, and *l'Ophtalmologie Provinciale*, T. IV, p. 103, octobre, 1907.

Motais's (Angers) patient, who complained of lacrymation, had a large tumour of the lacrymal sac which had been permanent for more than a year, but had varied somewhat in size

from time to time. There was fluctuation, but no redness or œdema and no regurgitation through the lacrymal puncta. The tumour could not be emptied by pressure. Motais diagnosed a "pyocele" of slow development, and made an incision into it, when to his surprise he heard a slight noise of escaping air, and found he had opened into a very large sac, which was empty and free from inflammation. A dressing was applied, and the wound allowed to heal, when it was found that the patient could distend the sac by an effort of expiration, and that the tumour could be reduced by pressure, the air passing out with a distinct crepitation, which was felt at the level of the nasal duct. Later, the incision was extended, and on careful examination the following conditions were found.—The sac was much dilated, especially below and outwards, and extended on the floor of the orbit for about a centimetre. The cavity above, although much extended, was at least double its normal size. The surface of the mucous membrane was of a yellowish-white colour, without erosions or excrescences, and there was no perforation of the unguis. There was a double fold of mucous membrane, above and below, covering the common opening of the lacrymal canals. The superior opening of the nasal duct was situated at least 3 or 4 millimetres outside the normal position and a fold of mucous membrane fell down over its inner border, covering about two-thirds of the opening. The sac being freely open, an effort of expiration forced air manifestly through the opening of the nasal duct and not anywhere else.

The lower three quarters of the sac was extirpated and the upper quarter was curetted. To avoid reflux of the air into a closed cavity, no sutures were inserted, and the patient was instructed not to blow his nose until healing was complete.

Six weeks later, the tumour was replaced by a firm scar, beneath which a passage had reformed, which permitted the upper part of the sac which had not been excised to be visibly inflated, so as to form a small tumour which could easily be reduced by pressure and did not trouble the patient. The lacrymation was cured. A similar but much less marked condition existed in the patient's other lacrymal sac.

Motais has been unable to find any similar case in ophthalmic literature, and considers that its occurrence was due to the following anatomical conditions: 1. a rounded inferior orifice of the nasal duct without folds of mucous membrane (he was unable to demonstrate the existence of this); 2. the double fold of mucous membrane closing the orifice of the lacrymal canals; 3. the abnormally developed valvule of Béraud closing the superior orifice of the nasal duct; and 4. the abnormal position of the superior orifice of the nasal duct. R. J. COULTER.

II.—TRAUMATIC ENOPHTHALMOS.

(1) Lukens, Charles.—Traumatic enophthalmos, with report of a case. *Ophthalmology*, October, 1906.
(2) Pagenstecher. — On enophthalmos. *Münch. med. Wochenschrift*, März 5, 1907.
(3) Duyse, van.—Traumatic enophthalmos. (Étude d'un énophtalmos traumatique.) *Archives d'ophtalmologie*, janvier, 1908.

(1) **Lukens** (Toledo, Ohio) reports a case of traumatic enophthalmos in a man of 54 years, and tabulates 78 cases of a like nature, all that he has been able to collect from the literature. Lukens's patient, in the course of a drunken brawl, received three stabs in the face, presumably with the small blade of a pocket-knife. One of the wounds passed through the left upper eyelid, near the centre of the same. Chemosis, exophthalmos, and reduction of sight were the immediate consequences. That the orbit had been fractured into one of the accessory sinuses was evidenced by the fact of hæmorrhage from the nose, lasting for ten days. Seen 38 days after the injury, there was enophthalmos of the wounded eye, the sight of which was 1/60 normal. The eyeball was dislocated 5 mm. or 6 mm. back of its normal position, and also 2 mm. or 3 mm. above it, and it was further rotated up about 30° and out about 20°. On palpation, the eye was found to be firmly held in this position by a resistant mass, extending from the eyeball to the floor of the orbit. No cicatricial bands could be felt at the site of the injury in the roof of the orbit. Traumatic enophthalmos may result from :— (1) direct or indirect fracture of the orbit ; (2) nerve lesion ; or (3) orbital inflammation and its consequences. In at least two-thirds of all reported cases, there was evidence of orbital inflammation, and upon subsidence of this inflammation, the enophthalmos usually became manifest. The interval between the two events—inflammation and enophthalmos—generally amounted to from two to three weeks—that is to say, too short a time for cicatricial contraction to take place. The explanation of such cases, Lukens believes, is to be sought in the absorption of the orbital fat, as a consequence of the inflammation. Effusion of blood may also play a part. SYDNEY STEPHENSON.

(2) **Pagenstecher** describes two cases of traumatic enophthalmos, a condition which he believes was due to fracture of the orbit, followed by hæmorrhage and subsequent cicatrisation. The author further alludes to a case of intermittent exophthalmos observed in a young girl a few days before the menses made their appearance for the first time. SYDNEY STEPHENSON.

(3) **van Duyse** (Ghent) narrates the following case of pure traumatic enophthalmos :

A woman, of 38 years, received a blow upon the right malar region by falling downstairs. When seen one hour after the accident, the eye was markedly prominent and deviated somewhat upwards. On the next day, when the exophthalmos had receded considerably, a diagnosis was made of fracture of the malar bone and of the upper jaw involving the border and the floor of the orbit. Three days later the exophthalmos had disappeared, but ecchymosis of the lower lid and of the lower part of the ocular conjunctiva was present, the pupil was somewhat dilated and sluggish, and the internal and inferior rectus muscles were paralysed. Moreover, there was anæsthesia of the region supplied by the infra-orbital branch of the second division of the trigeminal nerve. In something less than a fortnight after the accident, paresis of accommodation, as regards the injured eye, was noticed, a symptom that lasted about a month. Blood passed from the nose from time to time on using the handkerchief. Somewhat later it was found, by transillumination, that the antrum was more or less filled with blood. Some three months after the fall, the orbito-palpebral fold became deepened, and, after that, definite enophthalmos made its appearance, the eyeball lying 2mm. deeper than its fellow and being displaced 2·5mm. downwards. The two eyeballs occupied the same level when the patient was examined several months later, but the inferior rectus had not regained its functions.

van Duyse, commenting upon the above case, explains the various symptoms as follows.—The exophthalmos and displacement of the eyeball upwards were due to a hæmorrhage of the floor of the orbit caused by rupture of the infra-orbital artery in its canal. The ecchymosis accounted also for the muscular paralysis that was present in the case. That the sympathetic was not involved was shown by the action of cocain, which dilated the pupil, widened the palpebral fissure, and lessened the enophthalmos. The infra-orbital nerve was doubtless ruptured, thus accounting for the anæsthesia observed. van Duyse finding neither depression nor splintering of the floor of the orbit by *Röntgenogrammes*, refuses to adopt the notion of an increase in the capacity of the latter, as suggested by Lang and Birch-Hirschfeld. The slow development of the enophthalmos appears to exclude rupture of the band formed by the inferior suspensory ligament. A lesion of the sympathetic can be excluded on account of the integrity of Müller's fibres, the pupillo-dilator fibres, and the absence of vaso-motor modifications in the retina or the face. The author favours the idea of contraction affecting the lower part of the cellular tissue of the orbit as accounting for the enophthalmos and the displacement of the eyeball downwards. A cicatricial band, due to the same cause, interfered mechanically with the physiological action of the inferior rectus muscle. SYDNEY STEPHENSON.

III.—CYSTS OF THE IRIS.

(1) **Bardelli, L. — Contribution to the study of cysts of the iris.** *Annali di Ottalmologia*, Vol. XXXV (1906), fasc. 7 to 9, p. 660 to 685, with 14 figures on plates.

(2) **Roy, M. J. M.—A spontaneous serous cyst, movable in the anterior chamber. (Kyste séreux spontanée, mobile dans la chambre antérieure.)** *La Clinique ophtalmologique*, 25 août et 10 septembre, 1906.

(3) **Pascheff.** — A new theory on the origin of serous cysts of the iris developing in the anterior chamber and starting from the irido-corneal angle. (Nouvelle théorie sur la genèse des kystes séreux traumatiques de l'iris se développant dans la chambre antérieure et ayant pour point de départ l'angle irido-cornéen.) *L'Ophtalmologie Provinciale*, T. IV, p. 46, juin, 1907.

(4) **Gallemaerts.**—Congenital serous cyst of the iris. (Kyste séreux congénital de l'iris.) *Bull. et Mém. de la Société française d'ophtalmologie*, 1907, p. 334, and *Archives d'ophtalmologie*, novembre, 1907.

(1) The debated point with regard to the origin of cysts of the iris in general is the influence of injuries, especially with peripheral perforation of the cornea. **Bardelli** has brought together the literature of spontaneous iridic cysts by reviewing the cases to the number of twenty-two published since 1848, and has added the clinical and histological study of a small serous cyst which occurred in a child of nine years without any history of traumatism, and presenting absolutely nothing pathological either in his antecedents or upon examination. The cyst had developed within a few months, and had caused no irritation of the eye; for one month only it had encroached upon the pupillary area (it took origin on the upper part of the right iris), and interfered a little with the vision. It was, in fact, a serous idiopathic cyst of the iris, slightly conical in shape, vertical diameter 5 mm., horizontal 4 mm. at the base, and had a very thin wall. Excision, with iridectomy, was performed without difficulty in spite of the inevitable puncture and emptying of the cyst. The cure was perfect, with V. = 1. Microscopic examination of the fragments revealed the iris tissue extremely thinned by more or less advanced atrophy, which was greatest in the anterior wall of the cyst; the internal surface was lined by two, three, or even several layers of epithelial cells, which varied in shape and size. Minute examination of the cells revealed to Bardelli their direct ectodermic origin, showing the dermoid character of the iridic cyst. A. ANTONELLI.

(2) **Roy** (Canada) reports a very interesting case, in which a woman of 21, complaining only of some ocular fatigue, was found to have a movable non-pedunculated transparent cyst, measuring about 2.5 mm. in its greatest diameter, in the anterior chamber of one eye. The cyst had been present for eight years to the patient's knowledge, and had undergone no change in that period. It had given rise to no pain and to no discomfort beyond occasional obscuration of the visual field. There was no history of traumatism, or of intestinal worms, nor was there anything of interest in the personal or family history. The patient had, however, a slight degree of trachoma and also suffered from mixed astigmatism. A diagnosis was made of spontaneous serous cyst, and treatment was proposed for the trachoma, to be

followed by operation for removal of the tumour. Both were refused, and the patient contented herself with glasses. Roy assumes that the cyst was originally pedunculated and attached either to the ciliary body or posterior part of the iris, and that from some cause unknown the pedicle ruptured and allowed the cyst to come forward into the anterior chamber. It is noteworthy that there was no irritation of the iris, and that the pupil responded normally; there was no abnormality of any of the interior parts of the eye, and the tension was normal.

ERNEST THOMSON.

(3) **Pascheff** describes a case of cyst of the iris similar to one previously recorded by him* from a study of which he concludes that iridic cysts of the anterior chamber springing from the irido-corneal angle can be formed by invagination of the posterior irido-ciliary epithelium through an irido-dialysis into the anterior chamber. In support of this theory he refers to the fact that the posterior epithelium can form cysts on the posterior surface of the iris, and describes a case in which this occurred.

R. J. COULTER.

(4) **Gallemaerts** (Brussels) gives an account of the pathological anatomy of a transparent cyst (4mm. by 3·5mm.) which he removed from the iris of a child, aged eighteen months. It was clearly connected with the iris, and although believed to be of congenital origin, had been noticed by the parents for two weeks only. The specimen was fixed in formol, embedded in paraffin, and cut in series. The cyst was made up of two parts: 1. a portion free in the anterior chamber, composed of several layers of epithelial cells, ordinarily five in number, and polyhedral in shape; 2. an adherent portion, also composed of epithelial cells, adherent to and embedded in a compact mass of iris tissue, which included portions of the posterior pigmented epithelium. These two portions were connected by means of a canal, lined with epithelium, which contained particles of pigment. In short, then, the growth was a cyst destitute of glands and having an epithelial covering, of which the structure corresponded to the description given elsewhere by Rosenweig and Lagrange. Moreover, the interior of the cyst was in communication with an anfractuous cavity lined with pigmented epithelium.

Lagrange, who examined a case similar to the one described above in a patient of 19 years, admitted the congenital origin and epithelial nature of these serous cysts. He accounted for such cysts on the theory of fœtal inclusion, analogous to that which is believed to be the cause of dermoid cysts. Gallemaerts questions the truth of Lagrange's theory, since he cannot understand how a dermoid of the iris could take on the characters of a serous cyst. Schmidt-Rimpler and Terrien believe that serous cysts result from closure of one of the crypts of the iris. This

*_La Clinique Ophtalmologique_, mai, 1904.

hypothesis, again, is rejected by Gallemaerts on the ground that crypts are numerous and cysts rare, although inflammation of the iris should yield many occasions for obliteration of the former. Besides, on this view it is difficult to account for the fact (noted in 13 of 21 cases), that the cyst is located in the lower segment of the iris.

Gallemaerts himself attributes congenital cysts of the iris to persistence of some part of the so-called "annular sinus" or "sinus of Szili"—that is to say, the narrow chink which intervenes between the external and the internal layer at the anterior edge of the secondary optic vesicle. This sinus is readily seen in the eye of young embryos. Again, in the human embryo of 10mm. and 19mm. it has been recognized. In an embryo of 19mm. the space persisted below, although it had disappeared elsewhere. Obliteration of its cavity, in fact, does not occur simultaneously all around the optic vesicle. Gallemaerts supposes that the sinus instead of becoming obliterated, as it should do normally, for some unknown reason remains patent at one point. At a particular moment the little cavity thus produced becomes dilated, pushes in front of it the mesodermic tissues, and insinuating itself into the stroma of the iris separates the latter structure into two layers. The stroma forms the covering of the cyst. At first the covering is thick and contains vessels, but later it becomes reduced to a thin layer of cells, which may or may not be pigmented, provided by the stroma of the iris.

The theory outlined above has been mentioned by some other authors—as, for example, Pichler, van Duyse, and Bardelli. Gallemaerts, however, appears to have been the first who has been in a position to show pathological preparations which seem to prove that cysts of the iris are connected with persistence of some portion of Szili's annular sinus. Gallemaerts hints that the predilection shown by cysts for the lower segment of the iris may be connected in some way with the fœtal fissure.

SYDNEY STEPHENSON.

IV.—FOREIGN BODIES: THEIR REMOVAL, LOCALISATION, etc.

(1) **Casali, A., and Pasetti, G.—The Volkmann electromagnet in eye surgery.** *Annali di Ottalmologia*, Vol. XXXVI (1907), fasc. 12, p. 907.

(2) **Guibert.—Intra-ocular foreign body. Extraction on the twenty-first day. Cure. (Corps étranger intra-oculaire. Extraction au vingt-deuxième jour. Guérison.)** *L'Ophtalmologie Prov.*, T. IV, p. 74, août, 1907.

(3) Le Fevre, Walter Irwin.—The localization of foreign bodies in the eye with the X ray, with description of a new apparatus. *New York Medical Journal*, 19th October, 1907.

(4) Amberg, H.—Further clinical notes on the extraction of splinters of iron from the eye with the poleless magnet. (Weiterer Kasuistischer Beitrag zur Entfernung von Eisenplittern aus dem Auge mit dem Innenpolmagneten.) *Zeitschrift f. Augenheilkunde*, Dezember, 1907.

(5) Koster Gzn, W.—A method of removing the disturbing influence of the electric car system upon the sideroscope. (Ein Mittel zur Beseitigung des störenden Einflusses der electrischen Stadtbahnen auf die Sideroskope.) *Arch. f. Augenheilk.*, Dezember, 1907, p. 49.

(6) Kümmell, R.—On some remarkable injuries to the eye by foreign bodies. (Ueber einige bemerkenswerte Fremdkörperverletzungen des Auges.) *Zeitschrift für Augenheilkunde*, Januar, 1908.

(1) Among seven cases of penetration of the eyeball by chips of iron operated upon by **Casali** and **Pasetti** (Florence) with the electro-magnet, two eyes were enucleated later on account of sympathetic ophthalmia; one was exenterated for panophthalmitis, two showed cataract with perception of light in a restricted field, one preserved its normal appearance with almost no vision on account of detachment of the retina, and only one retained V.=0·15. The prognosis, then, is always grave, especially when the ciliary body is involved in the traumatism. It is advisable to operate, not by simply bringing the electro-magnet near the eyeball, but by introducing a tapered point, like that of the Hirschberg apparatus, into the wound itself. This greatly facilitates extraction with the minimum of damage to the deep membranes of the eyeball. A. Antonelli.

(2) **Guibert's** patient, a man aged 25, had a perforating wound of the lower lid and sclerotic, from which a piece of steel, 1 cm. by 6 mm. in size, was removed within an hour of the accident. The eye did well for a week, after which it got inflamed, and on the twenty-first day a second piece of steel, 4 mm. long by 3 mm. broad and as thick as a piece of paper, was removed from it. This had evidently been broken off the end of the first piece and was lying parallel to the sclerotic. There was some optic neuritis after the removal of the second fragment, but this cleared up under treatment, and the eye made a perfect recovery with full vision. R. J. Coulter.

(3) **Le Fevre's** method is based upon that of taking two lateral views at different angles. The method, he says, is not new, but the apparatus for accomplishing it is.

The patient lies on his side with the injured side next to a plate holder. This table plate holder has a little hinged trap door, which allows the plate to be placed upon it and then locked into place. In this way the plate can be changed without moving the patient. The author uses a 4 by 5 plate, "so the trap door is small and the patient has a better rest for the head when the plates are being changed. The 'landmarks,' or guide wires, are pasted upon the patient with adhesive plaster." The wires cross at the outer canthus, dividing the eyeball into quadrants. The wire pointer is arranged so that the pointer is in front of the pupil. With this method the cross wires are in contact with the plate and as near the eye as it is possible to get them. The position of the cross wires as they touch the plate will be the same in both views. After the first picture is taken the plate is changed and the paddle with the tube in the tube-holder is shifted to exactly the same angle on the other side of the perpendicular. "This is accomplished by having cleats set permanently so that the side uprights will go just so far and exactly the same to both sides of the perpendicular." When the uprights are perpendicular, the centre of the anode of the tube is directly over the spot where the wires cross. This is arranged with a plumb bob and the paddle then marked, so that it can be set and locked quickly and accurately. The uprights have little steel bars that are grooved and mortised in a slot, so that when these are placed in position they engage and hinge on the bar, passing through the base board. In this way the uprights are accurately hinged at exactly the same height. When not using the compressor for eye localization work these little bars are slipped out and then the uprights can be adjusted to any height. When used for ordinary work the little table is removed from the base board. CHARLES A. OLIVER.

(4) **Amberg** gives an account of sixteen cases where pieces of iron have been removed from the eye at the Basle Ophthalmic Klinik with the poleless magnet. A full account of this magnet with clinical notes can be found in the *Zeitschrift f. Augenheilkunde*, Vol. XIV.*

It has the form of an oval ring of soft iron which is wound with a large number of turns of fine copper insulated wire like a solenoid. When a continuous current flows round the winding, a homogeneous magnetic field is produced within the ring and any magnetisable substance, such as magnetic iron, becomes inductively magnetised. The ring magnet is large enough to enclose the head of the patient. The method of procedure is as follows.—The head of the patient is placed within the ring, and the windings connected up with a rheostat, a switch, and the town electric supply, which naturally must be a continuous and not an alternating current. A feeble current is allowed to

*See also THE OPHTHALMOSCOPE, 1904, p. 513.

flow, and a small iron probe brought near the eye. The foreign body becomes magnetic as does the probe. The foreign body is attracted and may cause pain. The current can be intensified as may be necessary and the splinter manipulated into the anterior chamber. If the foreign body is coming too rapidly the current can be switched off instantaneously. When the foreign body is in the anterior chamber, a small incision is made and the extraction completed with Hirschberg's small magnet.

The poleless magnet is more easily used than Haab's giant magnet, and the probes enable the manipulations to be more exact. Different sizes of probe are used, the heavier ones giving a stronger attractive power. The foreign bodies extracted varied in weight from 0·00053 to 0·7922 grammes.

The poleless magnet at Basle has been used 36 times, and, with two exceptions, all the foreign bodies have been removed. The Basle current has an E.M.F. of 220 volts at 4 amperes, which can be reduced to 110 volts at 8 amperes.

Amberg finds that the distance an iron splinter penetrates the eye is practically a function of its mass. Seven splinters in the cornea and sclera had an average weight of 0·00073; six in the iris, 0·0117; eight in the lens, 0·0278; eleven in the vitreous and retina reached an average weight of 0·104 grammes.

The use of the poleless magnet is not confined to the eye. It has been employed to extract pieces of iron from the nose and ear. T. HARRISON BUTLER.

(5) **Koster Gzn** places a magnet at a suitable distance underneath the needle of the sideroscope, in such a way, that the latter takes up a position at right angles to the current supplied to the electric cars. In this way, he gets rid of the disturbing movements of the needle induced by the electric current. The method appears to be effective, and does not seem to affect the accuracy and sensitiveness of the instrument.
P. J. HAY.

(6) **Kümmell** (Erlangen) cites cases where pieces of copper, leaden shot, and small stones have entered the eye, and remained for a long time *in situ* without causing any trouble. Some of these foreign bodies have altered their position in the eye in a remarkable manner; others have eventually given rise to chronic inflammation. Copper is, as Hirschberg remarks, badly tolerated; lead, on the contrary, may remain for a long time in an eye, and cause little or no irritation. Stone on account of its low specific gravity, does not usually penetrate deeply. When stones do enter the eye, they almost invariably induce a septic destructive process. The reader of the paper will discover that the dates of the case on page 39 are not in all cases correct (1907 for 1906). T. HARRISON BUTLER.

V.—EYE-STRAIN.

(1) Bouchart.—Vomiting caused by latent ocular deviations. (Vomissements et déviations latentes des yeux.) *La Clinique Ophtalmologique*, 10 février, 1907.

(2) Toms, S. W. S.—The relation of eye-strain to chronic headaches. *Journal American Medical Association*, March 23rd, 1907.

(3) Black, Melville.—Differential diagnosis between headaches of ocular and nasal origin. *Ophthalmic Record*, March, 1907.

(4) Mettler, L. Harrison. — *Journal of Ophthalmology and Oto-Laryngology*, April, 1907.

(5) Reik, H. O.—Is eye-strain ever an etiologic factor in epilepsy? *Journal American Medical Association*, 4th May, 1907.

(6) Cornell, Walter S.—Eye-strain in school children. *New York Medical Journal*, June 1st, 1907.

(7) Alger, Ellice M.—A case of eye-strain mistaken for appendicitis and cholelithiasis. *New York Medical Journal*, June 8th, 1907.

(8) Kirkpatrick, T. Percy C.—Eye-strain. *Medical Press and Circular*, January 1st, 1908.

(1) **Bouchart** relates the case of a girl of 19 years, who for four or five months had suffered from gastric trouble and migraine. After correction of her hypermetropia (and consequent spasm of accommodation and convergence), the vomiting entirely ceased. ERNEST THOMSON.

(2) From personal experience **Toms** has found that reflex headaches or neuralgia due to essential eye-strain comprise the greater percentage of all cases met with. This conclusion he bases upon the records of over 1,280 eye examinations, which, he says, justify him in stating that ninety per cent. of all those who came complaining of this distressing malady had ocular defects.

These examinations—most of which were made as part of routine work—showed that one-half, or over six hundred, revealed ocular defects which were never surmised by the patients themselves, and many of them were exceedingly sceptical of the suspected cause, inasmuch as they could not directly attribute, subjectively, the cause to their eyes, their vision being apparently good for all distances and conditions of light or work. Over eighty per cent. of the 1,280 cases had some form of headache, periodical and chronic; fifteen per cent. had typical migraine.

Only five per cent. had discoverable organic lesions that possibly intensified or were partly to blame for the head-pains. Of these one-half of one per cent. had some form of chronic nephritis (diagnosed or suspected by the appearance of the eye grounds). A few cases of diabetes mellitus, and three cases of brain tumour were recognised by the ophthalmoscope. One-fourth of one per cent. had absolutely emmetropic eyes, but with muscular anomalies. Twenty per cent. had gastrointestinal or hepatic functional derangements, the resulting toxic anæmia being coincidentally relieved or greatly benefited after the ocular reflexes had been corrected. Fully fifty per cent. of the sufferers had but slight refractive errors or muscular imbalance, contrary to the statements of authorities who teach generally that anything under one diopter of refraction may be ignored and left uncorrected when vision is 20/20 or better.

In the "sick" or bilious headache cases, ten per cent. existed in women at the menopause or were complicated by pelvic disorders, loose kidneys, and lax abdominal walls. Ten per cent. had intranasal diseases.

Of those who were relieved of their headaches, seventy-five per cent. had no other treatment than properly-adjusted glasses or appropriate treatment for their muscular anomalies. About twenty per cent., who were but partially helped or not relieved, refused ocular treatment or disregarded any advice as to the wearing of glasses or for other personal considerations.

The author believes that there is nothing especially characteristic in headaches due to eye-strain—except, perhaps, it is that the subject rarely suspects it being due to that cause. The types mostly met with are the occipito-cervical, fronto-temporal, and the hemicranias. He has found that apparently no relationship exists between the severity of the pain and the amount of the ocular defect present. C. A. O.

(3) It is only by exclusion that in many cases a diagnosis can be made between ocular headache, on the one hand, and nasal headache, on the other. According to **Black**, intra-nasal appearances are frequently deceptive. We cannot judge by inspection alone whether the nose is responsible for a given headache. At the same time, there are some forms of cephalalgia which are so clearly of nasal origin that the symptoms exclude all other causes. Accessory sinus headache will be variable, according to the efficiency or otherwise of the drainage from the sinus. Variability, therefore, is rather suggestive of sinusitis. The eyes, Black believes, are a more common cause of headache than the nose, so that if correction of optical errors does not relieve the pain, then close enquiry should be made into the nasal condition. Any nasal abnormality found or suspected should be considered a possible cause of the headache. Its correction will often lead to success.

SYDNEY STEPHENSON.

(4) As a conclusion of a brief and interesting article, **Mettler** makes the following general statement:—"It seems to me both rational and scientific to affirm that eye-strain and headache are not related to each other as a cause and effect, but that the latter, while depending primarily for its existence upon certain well-recognised, general physiological and psychological states of deterioration, may be, and sometimes is, roused into a distinct prominence, and kept there, by various abnormal and excessive peripheral activities, of which errors of refraction and unbalance of the ocular muscles are sometimes quite important." C. A. O.

(5) To **Reik** it seems that such cases as the six he reports in his communication "tend to prove that eye-strain is an exciting cause of epilepsy in persons whose constitutional weakness predisposes them to the disease." "The removal of one reflex excitant does not, of course, cure the disease; the predisposition is always there, and if the patient be again subjected to eye-strain, the attacks will probably recur; or, if the eyes be kept in perfect condition, some other exciting factor, like pregnancy, shock, or great anxiety, may precipitate a convulsion." He believes that every case of epilepsy deserves careful expert examination of all the special organs, in order to eliminate any possible exciting factor. C. A. O.

(8) **Kirkpatrick's** communication is particularly valuable, since it embodies the experiences not of an ophthalmic surgeon but of a physician with regard to the connection between eye-strain, on the one hand, and functional neuroses, on the other. Despite the amount of work that has already been accomplished, the influence of eye-strain as a cause of disease is not yet fully recognized by physicians, although Kirkpatrick himself believes that it is often very great. The examination of the eyes, however, must be conducted in no perfunctory spirit, and the author protests against the assumption of some ophthalmologists, namely, that minor errors of refraction may be safely ignored provided the patient's sight be tolerably good. Such a proposition is not warranted, and, in Kirkpatrick's view, "every source of eye-strain should be removed before one asserts that the symptoms complained of are not due to it." Many cases of migraine can be cured by the correction of errors of refraction or of muscular balance. It is the bounden duty of physicians to search for abnormalities of this kind in every case of migraine. The author gives details of a case of migraine in which the correction of 0·25 D. of myopic astigmatism gave no relief, which was nevertheless obtained after the correction of a faulty muscle balance. Many physicians when dealing with cases of headache and "neuralgia" still do not insist upon an examination of the eyes, unless there is an obvious defect in vision, and there are still oculists who do not consider it necessary to correct slight errors of refraction, provided sight be good.

SYDNEY STEPHENSON.

VI.—REMEDIES.

(1) Rampoldi, R.—The therapeutic action of jequirity in some cases of cancer. *Annali di Ottalmologia*, Vol. XXXVI, Jan., 6-8, p. 652-654, and Jan., 9-11, p. 842 to 845.

(2) Fromaget.—Non - diphtheritic pseudo - membranous ophthalmia cured by antidiphtheritic serum. (Ophtalmies purulentes et pseudo - membraneuses non diphtériques guéries par le serum antidiphtériques.) *Ann. d'oculistique*, T. CXXXVIII, p. 182, septembre, 1907.

(3) Menacho, Fernandez.—The treatment of cataract by iodide of potassium in sub-conjunctival injections. *Archiv. de Oftalmologia*, Oct., 1907.

(4) Erb, Albin.—Painless sub-conjunctival saline injections. (Schmerzlose subkonjunktivale Kochsalzinjektionen.) *Woch. f. Ther. u. Hygiene des Auges*, 3 Oktober, 1907.

(5) Bérard.—Hypnotism and suggestion in ocular therapeutics. (L'Hypnotisme et la suggestion en thérapeutique oculaire.) *L'ophtalmologie Provinciale*, T. IV, p. 106, octobre, 1907.

(6) Morax.—A note on the treatment by rabbit's bile of superficial affections of the eyeball caused by pneumococci. (Note sur le traitement par le bile de lapin des affections superficielles du globe oculaire causées par le pneumocoque.) *Ann. d'oculistique*, T. CXXXVIII, p. 361, novembre, 1907.

(7) Zimmermann.—On the cutaneous administration of iodine. (Zur perkutanen Jodbehandlung.) *Die Ophth. Klinik.*, November 20, 1907, p. 673.

(8) Darier, A.—Acoïn in the form of an oily collyrium produces prolonged anæsthesia of the human eye. (L'acoïne en collyre huileux produit une analgésie prolongée de l'œil humane.) *La Clinique Ophtalmologique*, 10 janvier, 1908.

(9) Reber, Wendell.—Comparative potency of hyosin and scopolamin hydro-bromid in refractive work. *Transactions of the Section of Ophthalmology of the American Medical Association*, 1908.

(10) Schumacher, Gerhard.—Experiences with Koch's old tuberculin in diseases of the eye. (Ueber Erfahrungen mit dem Kochschen Alttuberkulin bei Erkrankunge ndes Auges.) *Zeitschrift für Augenheilkunde*, März, 1908.

(11) **Gifford, H.—On the possible use of atoxyl and other preparations of arsenic in sympathetic ophthalmia, trachoma, and in some syphilitic affections of the eye: a suggestion.** *Ophthalmic Record*, March, 1908.

(1) In the second and third preliminary communications **Rampoldi** (Pavia) confirms, after twenty-seven new cases of cancer treated by gelatin discs, by more or less concentrated fluid extract, or by the ointment of jequirity, the excellent results of this topical application on superficial epithelial neoplasms. Even in desperate cases (cancer of the tongue, of the gum) the local modifications were very favourable (disappearance of odour, lessening of pain), and the general condition improved. The author is preparing to try two different powders obtained from jequirity seeds, and promises a fully detailed account of the results. In three cases he has injected the fluid extract (in minimal doses, for the procedure is a dangerous one) between the healthy tissues and the tumour mass, which became smaller, shrivelled up, or was even eliminated *en masse*. Altogether, seven out of fifteen cases to which the author makes more direct allusion have been perfectly cured (epithelioma of the forehead, of the ala nasi, of the eyelid and conjunctiva, of the cheek, etc.)

A. ANTONELLI.

(2) **Fromaget** records two cases of purulent ophthalmia with false membranes, due to infection with pneumococci, which were cured within 48 hours by injections of antidiphtheritic serum. In the second case, a baby 3 days old, although the entire lower half of each cornea had been ulcerated, the eyes were saved, and the leucomata left were slight. R. J. COULTER.

(3) **Menacho** denies the value of potassium iodide in the treatment of cataract. H. GRIMSDALE.

(4) The pain resulting from the first sub-conjunctival saline injection leads some patients to refuse further injections or simply not to return for treatment. Darier recommended that acoin should be included in the injection to relieve the pain. **Erb** states that it has not reduced the time during which the eye remains congested, and that it causes adhesions in the sub-conjunctival lymph-spaces. These adhesions are easily shown. Thus, if after an intermission from a prolonged course, the acoin saline sub-conjunctival injections be resumed, the conjunctiva is not found to rise in the characteristic blister-like manner seen in the cases where acoin is not used. Erb has devised the following method. One or two drops of a 10 per cent. dionin solution are succeeded two minutes later by several drops of a 4 per cent. cocain solution. Saline injections of 2 to 5 per cent. may then be given without pain or with merely transient discomfort. Whether the effect is due to the dionin or to the infiltration-œdema, the author cannot state. This method is not accompanied by the disadvantages of the other, nor has it led to a decrease in the beneficial results of treatment. W. B. I. POLLOCK.

(5) **Bérard** considers that sufficient use is not made of hypnotism in the treatment of ocular neuroses. He records a case of hysterical blepharospasm, cured by hypnotic suggestion, and a case of hystero-traumatic amblyopia in which a prediction that the patient would be able to read advertisements on a given day was followed by a recovery of sight at the time when it was promised. R. J. COULTER.

(6) **Morax** (Paris) has treated three cases of corneal ulcer, due to infection with pneumococci, by instillation of rabbit's bile, in addition to cleansing the lids, conjunctival sac, and lacrymal passages, and applying iodoform ointment and atropine, when indicated, to relax spasm of the iris. In two of the cases the surface of the ulcer was lightly scraped. All the cases ended in cure, the duration of treatment in hospital being respectively 16, 29, and 21 days. In two cases two instillations of bile were sufficient, but in the other a third was necessary. In all the cases improvement was marked on the third day. The author also treated with bile a corneal ulcer, due to bacillus pyocyaneus, but without any good effect. In a case of pneumococcus conjunctivitis, almost all the pneumococci were banished from the secretion in twenty-four hours by the instillation of a single drop of rabbit's bile into each eye. Gabriélidès claims to have obtained good results in similar cases by the instillation of sheep's bile. The treatment was suggested by the experiments of Neufeld, who found that the addition of 0.1 to 0.2 cc. of rabbit's bile to 2 cc. of a culture of pneumococci in bouillon rapidly killed pneumococci. Nicolle and Adil Bey have shown that this bacteriolytic property is due to the action of the bile salts, and the author suggests the use of a 2 per cent. solution of taurocholate of soda instead of bile. R. J. COULTER.

(7) **Zimmermann** has tried iothion ointment in cases of choroiditis, iritis, and optic atrophy, as also for hastening absorption of lens-matter and hæmorrhagic effusions. He recommends it for phlyctenular conjunctivitis, and also for non-specific keratitis, but, most of all, for scrofulous affections.

PERCIVAL J. HAY.

(8) **Darier** (Paris), after insisting on the uselessness of cocaine as an analgesic, and referring to dionin, orthoform, and anæsthesine, points out that Trolldenier discovered that acoïn, in 1 to 40 watery solution, produced anæsthesia for 24 hours in the rabbit's eye, although not in that of the human subject. Darier tried a 1 in 20 ointment of acoïn, and obtained analgesia of several hours, but the application of the ointment itself was painful. Pflugk (of Dresden), however, found a 1 per cent. oily solution of acoïn to be remarkably analgesic.* In 100 cases he produced lasting analgesia by repeated instillation of this collyrium, the application of which is painless. Acoïn does not paralyse accommodation, nor dilate the pupil, nor alter the corneal epithelium. Combined with cocaine, there is a rapid dilatation

*For abstract, see THE OPHTHALMOSCOPE, February, 1908, p. 128.

of the pupil. The oily collyrium of acoïn can be used to relieve the pain caused by using dionine in powder, and in wounds, iritis, etc. The analgesia produced may last from 12 to 24 hours. Solutions must be kept in the dark. ERNEST THOMSON.

(9) **Reber** (Philadelphia), who in 1899 published an article in which he expressed the view that hyoscin hydrobromid and scopolamin hydromid were practically identical in action, has since ascertained by more careful observation and experimentation on suitable patients that this is not the case. Charts are given in which are plotted out the curves of the effect of the drugs at intervals of five minutes on the pupil and accommodation. Every care was taken to ensure that the solutions used were of identical strength (one-tenth per cent.), and one drop of each was placed in the right and left eyes respectively of the same patient. The curves show that full pupil dilatation was obtained in 35 minutes with hyoscin, in 47 minutes with scopolamin, and that full cycloplegia occurred in 59 minutes with hyoscin, and in 92 minutes with scopolamin. The times are stated as averages of the cases experimented upon. Hyoscin is therefore approximately 50 per cent. more powerful than scopolamin. So far as the author can ascertain from the makers (Merck & Co.) the drugs are identical chemically and in their action on polarized light. He supposes that they must differ in some way in their molecular grouping, and this may be the case in other isomers also, such as caffein and thein, stovain and cocaine. Clinically, Reber had found in a general way that hyoscin is more certain than scopolamin, an observation, indeed, which led to these experiments. The patient is ordered to use one-tenth per cent. solution of hyoscin once or twice the evening before, and twice the morning of the consultation. Sometimes another drop is used in the consulting room. Accommodation sufficient for all but most exacting near-work is generally re-established in 48 to 60 hours. The patient is always instructed to press over the canaliculi, in order to prevent the solution reaching the stomach. ERNEST THOMSON.

(10) **Schumacher** summarises the results which have been attained in the Kiel Eye Clinic from Koch's old tuberculin used for diagnostic purposes. The injections were made at mid-day into the arm, and the dose was proportional to the vigour of the individual. The reaction was not found to bear a definite relation to the dose employed. No permanent harm ever resulted from the treatment. It was necessary to decide: (1) what proportion of individuals suffering from undoubted ocular tuberculosis reacted; (2) how many persons reacted in whom a tuberculous affection of the eyes could be excluded; (3) what proportion of doubtful cases reacted, and what diagnosis could be decided upon from the results of the reaction. A *local reaction* in the affected eye is universally admitted to have the highest diagnostic significance, and was always looked

for. "The injected tuberculin reaches the tuberculous foci through the circulation and induces changes in them, which are recognised as inflammatory by the presence of congestion, stasis, hæmorrhages, œdema, and collection of leucocytes." The local reaction in the eye shows itself as increased ciliary injection, increase or appearance of deposits on the back of the cornea, the presence of phlyctenules, the development of fresh nodes in the iris, and the presence of corneal infiltration. At Kiel it has often been noticed that an eye which showed no sign of irritation became injected after the treatment, while constantly an injected eye became more injected. Where there was a definite focus of disease the congestion was in its neighbourhood, but more frequently it took the form of a pericorneal blush. Increase of keratitis punctata and the appearance of fresh nodes were not observed. The appearance of phlyctenules were not regarded as part of the "reaction." The local reaction came on about 20 hours after the injection, and disappeared in about 10 to 20 hours more. Schumacher discusses the question as to whether this local injection is merely the result of the local fever caused by the tuberculin, and conclusively shows that it is not. It cannot be expected that a local reaction will be obtained in all cases where the eye is certainly tuberculous, for Zeigler has shown that in pulmonary phthisis tuberculin has an eclectic action, and that all the tuberculous foci are never affected—in fact, that relatively few show signs of an inflammatory reaction.

Results of the Injections.

I.—*Cases which were upon clinical grounds regarded as tuberculous.*

Seven cases of keratitis parenchymatosa all gave a typical general reaction. Three after one injection, two after two injections, and two after the third trial with a dose of 5 m.g. Six of these cases showed an increase of the circumcorneal injection. The remaining case had a very congested eye at the time the test was made.

Four cases which, in addition to deep-seated corneal disease, suffered from inflammation of the anterior part of the uveal tract, all gave a general reaction; one patient only after a second injection of 5 m.g. Two of these showed a distinct local reaction. Nineteen cases of cyclitis, clinically considered to be tuberculous, were tested; 11 gave the local reaction after the first or subsequent injections. In 31 cases, all clinically examples of tuberculous disease of the eye, gave a typical reaction, and 60 per cent. of them showed local signs of inflammation. 77 per cent. of these latter reacted to the first injection.

II.—*Cases which were certainly non-tuberculous in nature.*

Four cases of interstitial keratitis of undoubted syphilitic character gave no reaction.

Four cases of non-tuberculous disease—specific iritis and choroiditis, choroidal leuco-sarcoma, and trachomatous pannus did not react to one injection. A case of specific uveitis did not react after two injections of 2 and 4 m.g. A case of congenital syphilitic irido-cyclitis with keratitis not to three of 2, 4, and 10 m.g. respectively. In short, those cases in which on purely clinical grounds no reaction was expected, did not react, whereas cases in which a positive answer was looked for reacted.

III.—*Cases which were ætiologically doubtful.*

In 24 cases the differential diagnosis lay between hereditary syphilis and tuberculosis. Nine of these had bilateral interstitial keratitis and were undoubtedly the victims of congenital syphilis. They suffered, in addition, from tuberculosis of other organs. All gave the typical general reaction; 3 of them the local reaction.

Fourteen cases of interstitial keratitis, some certainly syphilitic and others probably so, were considered to be either "disposed" to tuberculosis or had large soft glands pointing to tubercle or "scrofula." Only one of these reacted.

After discussing these doubtful cases the author agrees with Brüchner and others that the local reaction alone can be regarded as decisive, the general reaction being only of secondary importance. It must, however, be remembered that only a certain percentage of tuberculous eyes give the local reaction. Seventy-six cases of the so-called *scrofulous* eye diseases were injected. Fifty-six reacted to the first injection, 6 to the second, 4 to the third. Twenty-four gave the local reaction as well.

The therapeutic value of new tuberculin.

The new tuberculin T.R. has been used at Kiel for two years as a therapeutic agent. Sufficient time has not elapsed to come to a definite conclusion as to its value, especially as many of the patients are still under treatment. Forty-eight cases have been treated, and many of them have had several courses of injections. The shortest period of treatment was 1½, the longest 8 months. Eleven to 48 injections were given at intervals of from 2 to 8 days. The highest doses varied from 0·02 to 2·0 m.g. of the dry substance. As little fluid as possible was used and it should only exceed 1/2 cubic c.m. when more than 0·5 m.g. of the dry material is used. Twenty-four cases of *uveal disease*, some severe, were treated. Nine were cured; 7 long-standing progressive cases, either improved or became stationary; 7 had relapses; and only 1 resisted treatment. Eight cases of *superficial keratitis*, a *phlyctenular conjunctivitis*, and an *episcleritis*; a case of *fistulous dacryocystitis*, which had all

resisted ordinary treatment for months and years were either cured, or did better than before treatment with tuberculin. Of 13 cases of *interstitial keratitis*, 7 were cured, 4 relapsed, and in 2 the result was very doubtful. The results, on the whole, were not so brilliant as those reported by von Hippel, but Schumacher gained the impression that the inflammatory processes were not so acute, and were favourably influenced by tuberculin.

SUMMARY.

Schumacher, when he considers all the cases together in which experimental injections of old tuberculin have been made, decides, with other authors, that the test clears up the diagnosis in many obscure cases, but with certainty only when the *local reaction* is obtained, or when the general reaction excludes another possible ætiology. The paper contains many useful facts, but the cases are presented in a confused fashion, and the general arrangement is bad. The paragraphs on the therapeutic action of the new tuberculin are most inconsequently sandwiched between those dealing with the diagnostic value of the old tuberculin. We had hoped that the term "*scrofula*" had died with the 19th century, but it appears still to survive at Kiel. T. HARRISON BUTLER.

(11) Atoxyl, a combination of arsenic and anilin containing 37·67 per cent. of the metal, has proved itself to be almost a specific in the treatment of the several diseases caused by trypanosomes. Thus, in sleeping sickness it has been used with good result by Thomas and Koch; in dourine and in the spirillosis of fowls by Uhlenhuth, Gross, and Bickel; while its value in syphilis, due to a near relation of the trypanosomes, the treponema pallida, has been abundantly proved by Salmon, Uhlenhuth, and Neisser. Lastly, atoxyl has been successfully used by Grosch in malaria. **Gifford** (Omaha, Nebr.) has treated two cases of sympathetic ophthalmitis with the new product, together with massive doses of sodium salicylate. The results were encouraging. In a couple of cases of interstitial keratitis atoxyl seemed to do good "but not in so pronounced a way that the experiment was at all conclusive." Gifford suggests the employment of atoxyl in the treatment of trachoma, internally, by direct application, and by subconjunctival injections. It is suggested that instead of atoxyl other preparations of arsenic, such as arsenious acid, may be employed. Attention is called to the fact that atoxyl is a powerful poison, to be used with circumspection. In an addendum to his communication, Gifford mentions a case of syphilitic keratitis where atoxyl "produced an unusually favourable result." *

SYDNEY STEPHENSON.

* The reviewer has formed a favourable opinion of atoxyl in the treatment of specific interstitial keratitis, in doses of 0·25 to 0·50 gramme injected beneath the muscles once, twice, or oftener in the week. Epigastric pain has been the only complication so far met with. He hopes to publish his results later.

VII.—OPERATIONS.

(1) Stevenson, Mark D.—Some important considerations in the extraction of cataract. *Journal American Medical Association*, 16th March, 1907.

(2) Black, Melville (Denver).—The use of the secondary cataract knife. *Journal American Medical Association*, 16th March, 1907.

(3) Perlander.—A new operation for shortening a muscle. (Nuevo procedimiento operatorio para el acortamiento muscular en el estrabismo.) *Archivos de Oftal. Hisp.-Amer.*, March-April, 1907.

(4) Reber, Wendell.—The present status of preliminary iridectomy as related to cataract extraction. *New York Medical Journal*, 6th April, 1907.

(5) Fromaget.—Partial amputations of the eyeball for secondary buphthalmos. (Amputations partielles du globe de l'œil pour buphtalmie secondaire.) *L'Ophtalmologie Provinciale*, T. IV, p. 6, avril, 1907.

(6) Bioletti, C. (Mortara).—A modification of the method of Vacher and Pansier; formation of two adherent conjunctival flaps for the extraction of cataract. *Annali di Ottalmologia*, Vol. XXXVI (1907), p. 625 to 631.

(7) Pes, O.—The labial mucous graft in the treatment of partial cicatricial symblepharon. *Annali di Ottalmologia*, Vol. XXXVI (1907), fasc. 12, p. 924.

(8) Roselli.—A new method of tattooing the eye. *Annali di Ottalmologia*, Vol. XXXVI (1907), fasc. 12, p. 943.

(9) Casali, A.—The method of Guaita in the treatment of chronic dacryocystitis. *Annali di Ottalmologia*, Vol. XXXVI (1907), fasc. 12, p. 955.

(10) Ferrara, M.—The correction of ptosis of the eyelid. *Annali di Ottalmologia*, Vol. XXXVI (1907), p. 957.

(11) Querenghi, F.—Remote results of sclerochoriotomy in the treatment of glaucoma. *Annali di Ottalmologia*, Vol. XXXVI (1907), fasc. 12, p. 946.

(12) Jack, Edwin E.—Cataract extraction: I. Is the case operable? II. Preparation of the patient. III. The anæsthetic. *Journal American Medical Association*, June 15th, 1907.

(13) Weeks, John E.—The incision for the extraction of cataract and the iridectomy. *Journal American Medical Association*, June 15th, 1907.

(14) Fox, L. Webster.—The delivery of the lens for the extraction of cataract: irrigation of the anterior chamber and the first toilet of the wound. *Journal American Association*, June 15th, 1907.

(15) Valude.—Operation on incomplete cataracts. (L'opération des cataractes incomplètes.) *Ann. d'oculistique*, T. CXXXVII, p. 425, juin, 1907.

(16) Heard, Major R.—An operation for entropion. *Ind. Med. Gazette*, June, 1907.

(17) Boldt.—New experiences with cyclodialysis. (Neuere Erfahrungen mit der Cyclodialyse.) *Beiträge zur Augenheilkunde*, 68 Heft, Juni, 1907.

(18) Ulbrich, H.—A plastic substitute for a completely destroyed upper lid. (Plastischer Ersatz eines völlig zerstörten Oberlids.) *Arch. f. Augenheilk.*, Juli, 1907, p. 9. Illust.

(19) Risley, S. D. (Philadelphia, Pa., U.S.A.).—The surgical treatment of chronic glaucoma. *Journal American Medical Association*, 27th July, 1907.

(20) Rollet.—Horse-hair drainage of the anterior chamber for hypertension and pain. (Le drainage au crin de la chambre antérieure contre l'hypertonie et la douleur.) *Revue générale d'ophtalmologie*, 31 juillet, 1907.

(21) Lederer, Rudolf.—A small modification of the Kuhnt-Müller operation for senile ectropion. (Ein kleine Modifikation der Kuhnt-Müllerschen Operation gegen Ektropium senile.) *Woch. f. Therapie u. Hygiene des Auges*, August 1, 1907.

(22) Menacho.—A method to determine beforehand the optical result of a tattooing. (Metodo para determinar "a priori" el resulatado optico del tatuage.) *Arch. de Oftal.*, August, 1907.

(23) Delord.—On a rare late complication of iridectomy. (Complication rare tardive d'une iridectomie.) *L'Ophtalmologie Prov.*, T. IV, p. 73, août, 1907, and *Bull. et. Mém. de la Société française d'Ophtalmologie*, T. XXIV (1907), p. 619.

(24) Lagrange and Aubaret.—A historical and clinical contribution to the treatment of dacryocystitis by the creation of a new passage through the unguis. (Contribution historique et clinique au traitment des dacryocystites par la création d'une voie nouvelle à travers l'unguis.) *Ann. d'Oculistique*, T. CXXXVIII, p. 161, septembre, 1907.

(25) Bettremieux, Paul.—Simple anterior sclerectomy. (La sclérectomie antérieure simple.) *La Clinique Ophtalmologique*, 25 août et 10 septembre, 1907.

(3) After a review of the plans generally adopted, **Perlender** describes the new method. The chief novelty is an instrument by which the muscle to be shortened is folded and held in position while the necessary suture is passed. An ingenious arrangement of sliding hooks allows the easy graduation of the amount. HAROLD GRIMSDALE.

(4) **Reber** (Philadelphia), who has felt that preliminary iridectomy offers the patient the largest chance of success, sent out a circular to 160 American ophthalmic surgeons asking for opinions on this subject. One hundred replies were received and are given in detail. They are summed up as follows: 11 misunderstood the questions; 47 believed that for most cataracts preliminary iridectomy is a safer procedure than combined or simple extraction; 19 believed that preliminary iridectomy is the safer thing to do in the presence of complications; and 17 felt that the chances of success for the patient would be in no wise enhanced, but somewhat jeopardised, by preliminary iridectomy. (This makes 94; no explanation is given of the absence of the remaining 6.) ERNEST THOMSON.

(5) **Fromaget** (Bordeaux) considers that, except in cases in which enucleation is absolutely indicated, it should be replaced by removal of more or less of the anterior segment of the eyeball according to the nature of the case. R. J. COULTER.

(7) In four cases, followed out for several months after the operation, **Pes** (Turin) obtained excellent results by grafting a flap of mucous membrane from the lower lip on the loss of surface of the bulbar conjunctiva, after dissection of the partial symblepharon (cicatrix after burn with lime or with a chip of hot iron). The only inconvenience was the rosy colour of the labial mucosa which persisted, and contrasted somewhat with the clear tint of the bulbar surface. The grafts were fixed with sutures, and both eyes were bandaged for three days. A. ANTONELLI.

(8) **Roselli** (Rome), in place of the ordinary colouring matters used choroidal pigment, taken direct from the eye of the crow (four cases of partial leucoma tattooed with de Wecker's hollow needle, with brilliant effect). In cases of total leucoma the author proposes to introduce into the corneal substance itself

little flaps of the choroidal tissue of the crow. The reaction would be minimal, with every chance of a lasting result.
A. ANTONELLI.

(9) The method of Guaita (1821) consists in re-establishing the permeability of the lacrymal passages by fitting—out of sight—a canula of an organic substance (decalcified frog's femur). **Casali** (Florence) insists on the good results of this method on condition that in the particular case treated there are no bony lesions, that there is not a great deal of purulent secretion, that there is not true ectasia of the sac or deep and extensive changes in the mucous membrane. Out of one hundred patients treated in this way cure was obtained right away in about eighty. In eleven cases there were relapses. A. ANTONELLI.

(10) **Ferrara** (Naples) describes an operation of his own for ptosis, in which the tendon of the levator, spreading out in the fibrous expansion of the tarso-orbital aponeurosis, is advanced in a sure way, without deformity or shortening of the tarsus. The operation, if not actually complicated, seems delicate enough. It seems to have given, in the author's hands, a rapid and perfect result in a case of paralytic ptosis, which occurred in a syphilitic patient already blind of one eye. The patient was unable to wait for the benefit of specific treatment on account of the urgency of his work. A. ANTONELLI.

(11) **Querenghi's** (Milan) sclerochoriotomy consists in paracentesis of the posterior chamber with a perfectly linear Graefe knife, puncturing and counter-puncturing immediately behind the insertion of the iris. By this operation communication may be established between the aqueous chambers and the peri-choroidal space, and thus the active or passive hydropsia of this space, the cause of the hypertension, may be compensated. This theory of the pathogenesis of glaucoma, old as it is (Le Fort), and given again a high place by Querenghi (1902), would seem to be confirmed by the clinical experience of this author. He epitomises his observations during the past five years (acute glaucoma, chronic glaucoma, glaucoma consecutive to choroiditis, buphthalmus, atropin glaucoma), altogether forty-three patients followed for a longer or shorter period, and fifty-four operated eyes. Of these cases one only was refractory. In all the others tension became normal. In any case the operation is harmless, free from danger, does not cause any deformity of the eye, and can be repeated if necessary. A. ANTONELLI.

(15) When it is necessary to operate on partial cataracts without waiting for them to become mature, **Valude** (Paris) prefers to perform a preliminary iridectomy accompanied by artificial maturation by means of a free discission of the capsule with a cystotome and to follow this up by extraction of the swollen lens in from 5 to 7 days. If artificial maturation is refused, and particularly in partial stationary cataracts, he performs extraction with iridectomy, and if necessary reopens the wound under cocaine

about the 6th or 8th day and removes the soft secondary masses by suction. Valude has tried extraction of the lens in its capsule (Smith's operation), but has given it up as unsatisfactory.

R. J. COULTER.

(16) **Heard** describes a modification of the Arlt-Jaesche operation performed by him with satisfactory results in about 100 cases. The modification consists in the excision of a strip of skin much wider toward either side than at its middle. The effect of the operation upon the outer and inner thirds of the lid is thus increased. Heard finds this necessary, because the ultimate effect of the ordinary operation is practically confined to the central portion of the lid. H. HERBERT.

(17) **Boldt** reports on 38 cases from Deutschmann's clinic where Heine's operation of cyclodialysis had been performed for various forms of glaucoma. His results are moderately good, especially in chronic glaucoma and buphthalmia.

R. GRUBER.

(18) **Ulbrich** describes an operation he performed for a man whose upper lid was removed for malignant disease. After dealing with the tumour, the author pared the margin of the lower lid so as to get rid of the eyelashes, and stitched it to the remains of the upper lid. A fortnight afterwards, a skin graft was taken from the upper arm and implanted into the lower lid. Two weeks later, the conjunctival sac was re-opened by an incision placed a little above the skin graft, and then the skin sutured to the conjunctiva. The result was that the eye could be closed perfectly, and could be opened to the extent of 5 mm.

P. J. HAY.

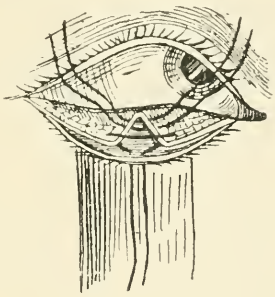
(20) **Rollet** (Lyons) has extended the use of horse-hair drains previously employed for hypopyon and for sero-plastic iritis, to cases of high tension and pain. Two cases are related which had one point in common, *viz.*: there was no vision. The first case is that of a young girl wounded in the eye by a piece of wood. Vision *nil*, traumatic cataract, T. + 2, severe pain; no relief from myotics. A horse-hair was introduced through the lower part of the anterior chamber from limbus to limbus; pain was relieved in one day, tension was subnormal on the third day, and the drain was removed on the fourth day. On the tenth day tension was normal, anterior chamber good, no pain.

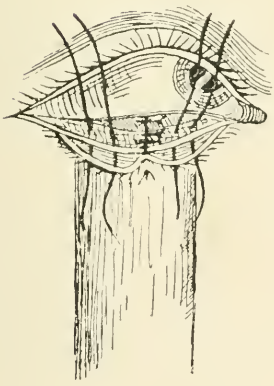
The second case is one of subacute primary glaucoma in a woman of fifty-six years. Vision *nil* T. + 1, pain. On the second day after introduction of a horse-hair drain the eye remained firm, and there was a little exudation on the hair; the latter was then removed. On the next day the eye was soft and a little tender on pressure. By the sixteenth day the tension had become normal, and all pain had gone.

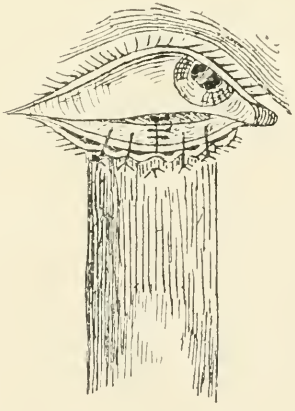
The *technique* is simple. With a Graefe knife the anterior chamber is punctured and counter-punctured, but the flap is not completed. The hair is easily introduced from side to side, and

its extremities fixed to the cheek with collodion. In non-infected eyes the drain should be examined in 24 hours, and, as a rule, removed in 48 hours. ERNEST THOMSON.

(21) Müller modified Kuhnt's operation by extending on one side or the other the intermarginal incision for double the length of the base of the tarso-conjunctival triangle. **Lederer** found in severe cases that the effect was only partial and somewhat confined to one side; and that on account of the obliquity of the sutures, the tarso-conjunctival flap did not firmly unite with the skin, in part due to the atony and yielding







character of the latter. He therefore carries the intermarginal incision on both sides of the triangle, which is placed centrally. His first, presumably a double suture, places the edges of the tarsus in accurate apposition, and both ends are brought through the centre of the eyelid. The redundant skin forms pouches on each side, which are flattened and spread out by two or three single sutures passing through the entire thickness of the lid. The accompanying illustrations explain the procedure.
W. B. INGLIS POLLOCK.

(22) **Menacho** covers the opacity to be tattooed with a stiff

paste of Indian ink: the borders of the applied paste must be sharp, and the lids must be kept from moving by the speculum. The patient is then tested to see if there is any improvement in vision. HAROLD GRIMSDALE.

(23) **Delord** (Nimes) performed a normal preliminary iridectomy for a man, aged 73, with marked arterio-sclerosis and arcus senilis. The patient was discharged a week later with a good anterior chamber, and the eye in a satisfactory condition. Two months later, he returned complaining that for some weeks previously he had felt a foreign body in the operated eye, but denying that he had met with any injury or suffered any pain. On examination, the entire iris was found to have been extruded from the eye through the incision and to be hanging on by a small pedicle. This was removed and the cataract was successfully extracted a fortnight later. The vision of the eye after operation was only 1/10, owing to choroiditis and vitreous opacities, but the patient was quite comfortable with smoked glasses correcting his hypermetropia. R. J. COULTER.

(24) After a brief *résumé* of the methods which have been devised for the treatment of dacryocystitis and of the anatomical and physiological ideas on which they have been founded, **Lagrange** and **Aubaret** express the opinion that the modern treatment of the condition by excision of the lacrymal sac condemns the patient in many cases to a regrettable mutilation, and record four cases treated by artificial drainage of the sac into the nose through an opening in the unguis. In one case the dacryocystitis recurred, and the lacrymal sac was subsequently destroyed by cauterisation by another surgeon. The other three cases were regarded as cures, but none of them had been kept under observation for more than four months.

The steps of the operation are as follows.—(1) An incision is made as for extirpation of the lacrymal sac. (2) The inner wall of the sac is separated from the bone. (3) The lacrymal groove is perforated and the nasal mucous membrane curetted. (4) A large piece of the inner wall of the sac is removed from a position corresponding exactly to the opening in the nasal wall. (5) The cutaneous wound is sutured. The operation can be done under cocain, but a general anæsthetic is advisable. The cutaneous wound usually heals by first intention. R. J. COULTER.

(25) **Bettremieux** has practised in a few cases of simple chronic glaucoma, an operation which consists in the removal of the superficial layers of the sclera in the region of the cornea. "The sclerotic having been exposed, with a needle slightly curved at its end, following Parinaud's technique for posterior sclerectomy, I traverse, tangentially to the corneal edge, the outer layers of the sclera, which I then excise with a narrow and thin Graefe knife." The author claims that the operation gives a true filtration cicatrix, or "filtering zone," as he prefers to call it. ERNEST THOMSON.

401

ADDENDUM

TO

DR. H. M. FISH'S COMMUNICATION

("A Study of thirty-six consecutive cases of Optic Neuritis.")

Published in the last number of THE OPHTHALMOSCOPE.

REVIEWS.

Lehrbuch der Augenheilkunde (Text-Book of Eye Disease). By Dr. ADOLF VOSSIUS, Professor of Ophthalmology and Director of the Eye Klinik in the University of Giessen. Fourth Edition. Leipzig and Vienna: Franz Deuticke. 1908.

The appearance of a fourth edition of Vossius' text-book is in itself an indication of the favour with which the work has been received since its first appearance in 1888. This edition follows the same lines as its predecessors, but embodies the more modern advances in theory and practice.

The plan of the work does not differ materially from that of other well-known text-books, but a useful feature is that each chapter is prefaced by an introduction dealing fully with the anatomy and physiology of the parts under discussion. The author also keeps well before the reader the interrelation between the affections of the eye and those of the other organs and of the body as a whole.

He eschews footnotes and bibliographical appendices, but gives abundant references to authorities by inserting their names in the course of the text. In this way the author is able to present all the current views on each subject, and to avoid dogmatism; but we doubt the wisdom of the plan, as it must be irritating to the student, to have the "narrative" so frequently interrupted by parentheses and italics, while to the more advanced reader it will not be entirely satisfactory, since the actual sources of the statements are not indicated.

Another general criticism may be permitted with regard to the spelling adopted. An effort to "Germanise" the spelling where possible is apparently responsible for the appearance, sometimes in close apposition, of the different forms "cyclitis" and "zyclitis," "conjunctivitis" and "konjunctivitis," while "hypopyum" is used in the index, and "hypopyon" in the text. There is no obvious advantage in the use of these alternative spellings.

To come to the matter of the book, every aspect of ophthalmology seems to be fully and fairly treated, and the instruction given is quite up-to-date.

In the chapter dealing with concomitant squints the author perhaps dwells too exclusively on Donders's theory of their origin. A little clearer indication of the relation between concomitant squint and the latent muscular errors would have been an improvement. The subject of heterophoria does not receive so much attention as in some modern text-books.

In view of the present renewed interest in the subject of prophylaxis of ophthalmia neonatorum, it is interesting to note that the

author would not make the prophylactic instillation of silver nitrate obligatory on midwives. He would only instruct them to use it where there was reason to suspect gonorrhœa or purulent vaginal discharge.

Trachoma is described under the title "granular" or "follicular conjunctivitis," but the author makes it quite clear that he denies the identity of this affection and "follicular catarrh." He believes strongly in the operative treatment of trachoma, especially in the excision of the affected retrotarsal fold. He does not approve of jequirity, and he believes the results of radiotherapy to be merely temporary.

In dealing with sympathetic ophthalmitis we are interested to see that, on the strength of a personal observation, he denies the truth of the commonly accepted statement that panophthalmitis protects against the occurrence of sympathetic inflammation. His use of terms in this connection is different from that customary in this country. The injured eye is called the sympathising (*sympathisierend*) eye, and the sympathetically inflamed eye the sympathised (*sympathisient*) eye.

Under glaucoma he refers to a great many investigators and discusses the various theories of its origin. He seems, however, to favour Jacobson's theory, namely, that glaucoma is primarily due to stasis or hyperæmia in the veins of the anterior section of the choroid.

In our opinion, the illustrations are the least satisfactory feature of Vossius's text-book. While the total number of illustrations is not deficient, it is noteworthy that more than twenty of them appear twice or three times in different parts of the work. By removing these duplicates the publishers could make room for the addition of some thirty really useful illustrations. The pictures of fundus conditions are so poor that most of them would have been better omitted. This defect is regrettable, as the book is in all other respects worthy of the heartiest recommendation.

It only remains to be said that the book is well printed on good paper and is very free from printer's errors. (The usual mistakes occur in the spelling of English names, Braitey for Brailey, MacGilarry for MacGillivray, and Grichard for Prichard.) A good index is provided, in which references to general medicine or to special organs are indicated by heavy type and authors' names by italics. A. J. BALLANTYNE.

Troubles Visuels dûs à l'Abus de l'Alcool et du Tabac. Par le Dr. F. TERRIEN, Ophtalmologiste de l'Hôpital des Enfants malades. (**Visual Troubles consequent upon excess in Alcohol and Tobacco.**) Paris: Baillière, 1908, p. 40.

In a pamphlet, which is a reprint of an article published in the *Annales d'Hygiène*, Dr. F. Terrien discusses the various effects of alcohol and tobacco, both separately and combined.

The effects of these poisons upon the eyes, when taken in excess, are better known than others, because their use is more common, and M. Lapersonne has given statistics which show that visual defects may be observed in one case out of every 200 men examined. The evil effects of alcohol have long been observed. The redness and suppuration of the conjunctiva and of the borders of the lids resulting were noticed by Pliny, whilst in the writings of Seneca and Martial passages are found alluding to visual troubles and even to blindness. In later times, as in the middle of the 17th century, attempts were made to establish the pathogeny of alcoholic amaurosis and of such symptoms as modifications in the size of the pupil, contraction of the visual field, and paralysis of the muscles of the eye, but it is only recently that the true nature of the defects have been established. The relative importance of the two agents has been much discussed. English writers, led by Hutchinson, Nettleship, and Berry, attributed the symptoms observed chiefly to tobacco, which there can be little doubt is by itself capable of producing them. Nevertheless, alcohol in excess produces similar effects. As a rule, however, the two factors co-operate. The composition and quality of each drug must be taken into consideration. Ethylic alcohol is toxic in proportion to its contamination with other alcohols, such as the methylic, propylic, or amylic, and the presence of essential oils, such, for example, as that of absinth, which is highly injurious. Eau de Cologne and dentifrice containing alcohol are also not infrequently consumed, and, whilst the injurious effects of ethylic alcohol can be removed by appropriate treatment, those of methylic alcohol are much more persistent and may lead to blindness or even to death. So, too, with tobacco, the quality may vary, as well as the mode of consumption, as by smoking, chewing, or using it in the form of snuff. Visual troubles are frequent in those who smoke cigars, but are less common in those who use a pipe, and still less in the smokers of cigarettes. Some men inhale the smoke into their lungs and allow it to escape by the nose; others chew the ends of their cigars, and Thesdovits has shown that the last quarter of a cigar holds half the nicotine that was contained in the whole cigar. Hence, the toxic effects of tobacco are more evident in those who smoke their cigars to the stump than in those who discard the last part. In the next place, the predisposition of the individual must be taken into consideration, for in some persons alcohol affects the liver, in others the kidneys, in others the general circulation, and yet in others the brain. Social conditions exert an undoubted influence—wine merchants, cooks, and coachmen, for example, are more liable to alcoholic amblyopia than others. Those who live and work in the open air burn off the alcohol they consume, and, consequently, are less affected by it than those pursuing sedentary occupations in towns, and

the same may be said of tobacco. The bad effects of alcohol and tobacco may especially be noticed in those suffering from disorders of the digestive organs, Brauchli's observations demonstrating the existence of such disturbances in 89 out of 144 cases, and they are probably often overlooked; exposure to cold and damp, to which men are more especially liable, and to changes in diet, promote attacks. In two cases amblyopia appeared in the suite of toothache. Mental excitement, care, grief, want of sleep, privation, insufficient food are all unfavourable circumstances which may lead to the sudden supervention of ocular disturbance. This was particularly exemplified in the siege of Paris, when Panas noted 50 cases of toxic amblyopia, whilst amongst the 3,000 patients ordinarily in attendance at his hospital there were usually not more than 8 or 9. Similarly, and more recently, Santos Fernandez has stated that at the outbreak of the Cuban war, the soldiers who were exhausted with fatigue, long marches, and indifferent food, presented the phenomena of sudden attacks of amblyopia; such attacks are also seen in the later stages of infectious diseases, like influenza and typhoid fever. Neuropathic subjects, inheriting a nervous temperament, the feeble, and those suffering from diabetes, are especially liable; neither age nor sex appears to have much influence on the supervention of amblyopia. Terson observed a case in a child of 12; another case has been recorded in a child of four; and it has been noted in an old person of 80. The state of the refraction is of importance. Terson, de Lapersonne, and Parisotti have all directed attention to the circumstance that toxic amblyopia occurs almost exclusively in hypermetropes, whether astigmatic or not, rarely in emmetropes, and never in myopes, which is clearly connected with failure of the powers of accommodation in the former two classes. Dr. Terrien proceeds to give the clinical aspects of the affection and notes its usual gradual development and chronic form, the dazzling or the nyctalopia, which occurs more frequently in the alcoholic form than in the others, the patient seeing better in a moderate than in a bright light, a symptom that is particularly observable in the morning on waking from sleep, or in soldiers after a long march on a sunny day. Occasionally xanthopsia occurs. The functional symptoms include a central or paracentral scotoma which first affects green, which is a pathognomonic symptom of toxic amblyopia; the perception of red is soon after impaired, and subsequently the two other complementary colours, white remaining visible for some time after this, and after its loss the scotoma is absolute. The form of the scotoma is a horizontal oval, extending from the blind spot of Mariotte to the point of fixation. It is therefore paracentral, and presents similar features in both alcoholic and in tobaccic amblyopia. In some instances it is pericentral. The scotoma, when well marked, has usually a mean horizontal diameter of 20° to 22°, though it may oscillate

between 16° and 30°, and a vertical of about 10° to 12°. Toxic amblyopia either from alcohol or from tobacco is always bilateral, though the scotoma may not be of equal intensity in the two eyes. The field of vision is not, as a rule, contracted, although exceptional instances have been recorded, and the luminous sense remains unaffected. Diminution of visual acuity is often considerable, and vision may be reduced to $\frac{1}{10}$ of the normal. In regard to the objective symptoms, nothing is known of the earliest stages, but after the lapse of a few weeks or months, partial discoloration of the papillæ, indicating atrophy, affecting almost always the temporal side and of triangular form, with the apex at the centre of the papilla, is usually visible. The optic fibres implicated are the fasciculus occupying the centre of the optic nerve, which becomes the maculo-papillary bundle. Slight hyperæmia of the disc on the nasal side may accompany the temporal pallor, but it is more rarely seen. The vessels remain normal. Various retinal or choroido-retinal changes may be met with, such as hæmorrhages and white spots, which, however, are the result of renal disturbances and have no direct connection with the amblyopia. Certain alterations in the pupil may be sometimes observed, as slight dilatation, especially in alcoholic amblyopia, whilst myosis is more common in nicotinic amblyopia. In the later stages the reaction to light may be entirely abolished, with retention of the Argyll Robertson sign. Diplopia, from insufficiency of the external muscles of the eye, hemeralopia, nystagmus, glaucoma, and visual hallucination have been occasionally observed. The prognosis, as a general rule and in all but very severe cases, is favourable. According to Brauchli's statistics, 28 per cent. of all cases recover completely; 57 per cent. improve considerably; and in only 15 per cent. is the result unfavourable. The longer the duration of the amblyopia the less the chance of complete recovery of vision.

HENRY POWER.

NOTES AND ECHOES.

Obituary.

THE death is announced at the early age of 38 years, of Francis Morley Michael, a member of the staff of the Manhattan Eye and Ear Hospital, and oculist to the Binghamton State Hospital, Binghamton City Hospital, etc.

* * * *

Appointments.

DR. S. L. ZIEGLER has been appointed Consulting Ophthalmologist to the North-Western General Hospital at Philadelphia, and Dr. Luther C. Peter attending ophthalmologist to the same institution. Dr. C. O. King has been appointed Consulting

Ophthalmologist to the Oncologic Hospital, Philadelphia. Dr. Moreau has been appointed Ophthalmologist to the Hôpital Saint-Etienne, Lyons, France. Dr. Lagrange, of Bordeaux, was elected national corresponding member of the Académie de Médecine on March 17th last.

* * * *

Professor Saemisch.

ON the 15th May next Professor Theodore Saemisch celebrates his jubilee at Bonn, Germany. Many of his colleagues and friends wish to celebrate the occasion by erecting his bust in the University Eye Klinik. An influential committee has been formed for this purpose, the English members of which are Sir Hermann Weber and Mr. Edward Nettleship. Communications may be addressed to Professor H. Kuhnt, of Bonn, and subscriptions sent to the Bonn branch of the *Schaaffhausenschen Bankvereins*. Professor Saemisch has many friends and admirers in this country.

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Mr. A. F. MacCallan.

MR. A. F. MACCALLAN, Chief Ophthalmic Inspector in the Public Health Department of the Egyptian Government, and the representative of "THE OPHTHALMOSCOPE" in the land of the Pharoahs, has received the King's permission license and authority to accept and to wear the insignia of the third class of the Imperial Order of the Medjidieh, bestowed upon him by the Khedive in recognition of the services he has rendered in the land of his adoption.

* * * *

Trachoma.

THE prize of 1,000 crowns offered by the Imperial Hungarian Minister of the Interior for the best essay on the ætiology of trachoma will be presented to the successful candidate at the sixteenth International Medical Congress at Buda-Pest, which will meet from August 29th to September 4th, 1909. Essays, which must be in English, Hungarian, French, or German, must be received before December 31st, 1908. Address: Belugy Ministerium, I, Var, Buda-pest. The sum of 6,000 marks has been placed by the Prussian Ministry at the disposal of Professors Greeff and Frosch for the continuation of their researches into the ætiology of trachoma.

* * * *

A Benefactress to Ophthalmology.

MRS. OGILVIE, mother of Mr. F. M. Ogilvie, surgeon to the Oxford Eye Hospital, died on April 2nd, at Sizewill, Suffolk. Some few years ago Mrs. Ogilvie gave the sum of £5,000 sterling to the University of Oxford for the purpose of founding a Readership in Ophthalmology, a post now held by Mr. R. W. Doyne. The deceased lady gave also large sums of money to the Oxford Eye Hospital. R.I.P.

* * * *

The Fearsome Oculist."

IT is difficult to believe that the following letter, which appeared in *The Optician and Photographic Trade Journal* of April 3rd, 1908, is intended to be taken seriously :—

SIRS,—Why is it that oculists are so objectionable, or appear to be so drastically inhuman to the women who seek their advice? After my first visit to a member of the eye profession I reproved myself for my lack of self-control, and registered my foolish feelings to be due to those horrible drops which seem to rejoice the hearts of all eye doctors.

My second visit, however, almost produced hysteria, and I began to compare with it my consultations with surgeons, medical and dental, and I realised that never before had any professional, however objectionable, caused me to evince such hatred as for the man who I believed was doing for me his best. Thereupon, with well trained weapons, I set out to gather information from my friends. The first interrogated on the subject was a girl suffering from a serious eye disease, but from which she is rapidly recovering. "Dislike the man," she said, "Why, I felt like murdering him for the first month or two, but I was obliged, with great force of will, to control myself, as I had to spend so much of my time at his house." Another sufferer was a woman of quite a different temperament, and she received my suggestions as to the kindness of oculists with mixed horror and amazement. "Kindness," she sneered, "Why, the man I go to was good enough one day to say to me, 'You ought to be glad you are not blind.'"

It appears to me that comment on such a statement is useless. One does not often meet a doctor who tells you that because you have a sore finger, you should be glad you have not lost your arm. Good medical men make too great a study of female mentality for that.

After this experience of varied opinions, only two of which I quote. it appears to me that the eyes must be in some way closely connected with the seat of hysteria, and in order to help his patients, and encourage those with the slightest troubles to seek advice, the oculist should just be a little more gentle, a little more sympathetic, instead of driving them into the arms of the

friendly doctors who probably—through a woman's difficulty of describing her complaint—treat them for an entirely different disease.

Were I not mated to an optician, who rules me with a rod of iron, no power on earth would drive me near an oculist again.

I crave this space, dear sirs, hoping my abuse may "catch the eye" of one of these unsympathetic oculists.

AN OPTICIAN'S WIFE.

* * * *

Dr. R. A. Reeve.

IT is pleasant to read that one of our number, Dr. R. A. Reeve, who was president of the British Medical Association in Toronto in 1906, has been presented with a painting of himself by the executive committee for Ontario of the British Medical Association.

* * * *

Ophthalmia Neonatorum.

AN interesting experiment in the treatment of ophthalmia neonatorum was reported by Dr. Nimmo Walker to a recent meeting of the Liverpool Medical Institution. With the help of the local Health Department, acting under the "Notification of Births" and the "Registration of Midwives" acts, infant and mother were admitted at the beginning of the disease into a small ward at St. Paul's Hospital. The development of the Liverpool experiment will be watched with interest.

* * * *

International Medical Congress.

THE section of the ophthalmology at the International Medical Congress at Buda-Pest next year, will be presided over by Professor E. v. Grôsz. The secretary is Dr. C. Scholtz. Numerous communications have already been promised. Among the names of contributors we notice those of W. H. H. Jessop and Henry Juler, of this country, and that of Weeks, of the United States of America.

* * * *

Sight in the Marine and Railway Services.

AT a meeting of the Aberdeen Medico-Chirurgical Society, on February 20th, Dr. Galloway reported "Five additional cases of Serious Visual Deficiency affecting responsible employés in the Marine and Railway Services," published in the present issue

of THE OPHTHALMOSCOPE. On the motion of Professor Ogston, the question of examination of such servants was referred to the Council for consideration and report. Whatever opinion one may hold with regard to the efficiency of the methods of examination at present in vogue in these services, it is apparently not difficult, judging from Dr. Galloway's series of cases, to find very defective servants holding responsible positions for which they are quite unfit, and these undoubtedly form the potential cause of the "mysterious" accidents of the future. At the present time, when there seems to be some likelihood of improvement in the regulations with regard to the examination of employés, it would be well if at other centres, the cases of defective servants—names not necessarily being mentioned—were reported to the local societies, in order that combined action might be taken to influence and to support the Board of Trade in any proposed legislation.

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CONTENTS.

Original Communication—

1. Sir W. R. Gowers, M.D., F.R.S.—The Mechanism of Nystagmus.... 412

Clinical, Pathological and Therapeutical Memoranda—

1. Ernest E. Maddox, M.D., F.R.C.S.—A Note on Antistaphylococcic Vaccine 414
2. Robert W. Doyne, M.A., F.R.C.S.—A Case of Glaucoma treated by Lagrange's Operation of Sclerecto-Iridectomy 416

Review—

1. The Lymph Circulation of the Eye and the Genesis of Glaucoma.—By T. Harrison Butler, M.D. 418

Translation—

1. A Method of obtaining Serial Sections of Eyes Embedded in Celloidin.—By Dr. Calderaro 429

Report of the Committee on Ophthalmia Neonatorum of the American Medical Association 427

Current Literature—

I. The Superficial Sensibility of the Eyeball 441
II. The Yellow Colouration of the Macula. 441
III. Does Incipient Cataract ever Disappear? 442
IV. Simultaneous Contrast in Colour-Vision 444
V. Optic Neuritis 446
VI. Obstructive Disease of the Retinal Vessels 453
VII. Fracture of the Skull and of the Optic Canal 454
VIII. Operations 455

Reviews 464

Notes and Echoes 474

ORIGINAL COMMUNICATION.

THE MECHANISM OF NYSTAGMUS.*

BY

SIR W. R. GOWERS, M.D., F.R.S.,

LONDON, ENGLAND.

ALTHOUGH much has been written on nystagmus, little attempt has been make to discern its nature. The explanation put forward by Wilbrand thirty years ago remains the most adequate. This ascribes it to a want of harmony between the volitional impulse and the state of the common reflex centre for the eyeballs, owing to a disorder of either, that of the centre being due to a change in the influences that act upon it. This does not throw much light on the precise origin of the symptom.

Nystagmus varies much in range and rapidity. As a rule, the wider the range the slower the movement, but the slighter may pass into the greater degree, and that which is partial into that which is general. Hence, all forms must have the same origin. Its features are best observed in the outward moving eye in horizontal nystagmus, on the side towards which the motion is quicker. Under the will, the right eye moves outwards, but just before reaching the limit the muscle relaxes and its opponent simultaneously contracts, and brings the eye back, but is arrested in turn just before it reaches the mid-position, and the external rectus again contracts and moves the eye outwards rather more quickly than it was moved inwards. So goes on what is, of course, an alternate contraction of the opposing muscles, instead of their related state in which the opponent to the primary muscle supports but yields to the movement produced.

Is there to be discerned elsewhere a similar substitution of alternation for synchronous action, that may throw light on the process in nystagmus? It has been compared to certain forms of tremor, but a comparison of obscurities only lessens the light we have. In his series of researches on the "Reciprocal Action of Antagonistic Muscles," Sherrington has found that, after division of the spinal cord of an animal in the cervical region, the spinal centres for the hind limbs pass into a peculiar automatic state. If a muscle contracts so as to cause considerable movement, it suddenly relaxes, and contraction of its opponent occurs, and, in its turn, is suddenly relaxed and the acting muscle again contracts, this alternation going on. He has found that the arrest of action is due to the inhibition of the spinal centre of the acting muscles, produced by a nerve impulse from

*Abstract of paper read before the Neurological Section of the Royal Society of Medicine on *May 6th*, 1908.

the antagonists. If their nerve is divided and the central end stimulated the same inhibition occurs. Since the nerve is purely muscular, it must be due to a nerve-impulse from the muscles, produced by their extension, probably through the muscle-spindles. The alternation is thus due to an automatic muscle-reflex process. (A very similar phenomenon may sometimes be observed in lateral sclerosis in man.) The resemblance of this alternation to nystagmus is so close as strongly to suggest that their mechanism is the same. There must be structures near the nuclei of the ocular muscles, which constitute a centre analogous to the centres of the spinal cord, and subserve binocular combination and reflex action, including muscle-reflex action, and through this the will must act.

Farquhar Buzzard has just described structures in the ocular muscles which he believes are neural spindles. It cannot be doubted that afferent impulses arise in these muscles, since a small twig connects each muscle-nerve with the fifth ; the highest cells of this are near the ocular motor nuclei. But we seldom have any defect in the volitional impulse in nystagmus, or disease in the cerebral hemisphere. The lesions which cause it are in or near the mid-brain, pons, and cerebellum. This lower, reflex centre is subject to many influences, the balance of which seems essential for its equilibrium, and, apparently, if any of these are deranged, the muscle-reflex action is able to assert itself. It is only when the balance is normal that the will can secure the due synchronous action of the opponents. There is much that supports this hypothesis.

Infantile nystagmus, in many cases, seems to be due to too little or too much light entering the eye during the first month of life, when the function of fixing an object is being developed. This shows that light acts on the same centre, and it shows also how readily the arrangement in the centre for the reciprocal alternation of the muscles may become dominant. Softening in one side of the pons, abolishing movement of the eyes towards that side, will produce extreme nystagmus on movement to the other side. Insular sclerosis and tumours in the vicinity are frequent causes. Labyrinthine disturbance (increased pressure, rotation, thermic changes), causes brief nystagmus which must be due to the temporary derangement of the balance of the muscle-reflex centre.

Nystagmus of moderate degree is only evoked by the action of the will on this lower centre. The quicker movement in the direction of volition must be due to the will in the first instance, but the muscle-reflex action may become so dominant that the direction of the quicker movement may ultimately become almost independent of the will. A horizontal nystagmus (quick to the right) may persist in the mid-position at rest, in the vertical movements, and even half way through the voluntary movement to the left. A downward nystagmus may cause the horizontal

movements to slope downwards. These facts are all clear evidence that the process arises from derangement of the lower centre and of the readiness with which it transcends the control of the will. They enable us to understand that a primary change in this centre may produce the state for which, in the spine, it is necessary to cut off the volitional impulse.

The slighter and irregular forms of nystagmus may seem difficult to explain. But an extreme nystagmus may begin in a trifling degree, and observation suggests, on many grounds, that the centre is very complex and partial derangements may cause partial insubordination. Thus, in a case of general nystagmus the oscillations in the slanting movements of the eyes may be either in the direction of movement, or may be vertical, or horizontal, *i.e.*, in the direction of the action of only one of the muscles which cause it, and this in the same patient. The same consideration explains the rotatory nystagmus, which is more frequently unilateral than any other. It is common in the form met with in miners, but this seems reasonably explained by the mechanism here suggested. Nystagmus is seldom associated with partial paralysis, except in cases of some duration, and the deficiency in the afferent impulses will itself have a disturbing influence on the centre. The explanation of nystagmus, as a reciprocal muscle-reflex action, due to disturbance of balance of the mid-brain strictures which subserve this action, will no doubt present difficulties, but these will probably lessen when they are fairly considered.

CLINICAL MEMORANDA.

A NOTE ON ANTI-STAPHYLOCOCCIC VACCINE.

BY

ERNEST E. MADDOX, M.D., F.R.C.S.Edin.,

BOURNEMOUTH, ENGLAND.

THE following account, given as accurately as memory serves after so long an interval, may perhaps be of service to any operator who may fall into a like misfortune. On this account it ought to have been published earlier.

On 2nd March, 1907, Admiral ———, aged 78, was submitted to extraction of cataract from the right eye, Dr. Hardy, of Bournemouth, being present. An iridectomy had been performed previously, and had healed nicely except for a troublesome spasmodic entropion, which developed the first day after the operation, and for which, a few days later, the usual spindle of skin was removed.

The extraction went normally, and, indeed, more smoothly than usual, owing to the patient's absolute self-command. Between the second and third day, as discovered on the morning of the third, an attack of acute gout in the system supervened, the first in his life. The right foot became greatly swollen and painful, the skin tense and shiny, and the scalp and forehead broken out into eczema. The incision looked a little unhealthy at one spot particularly, where by next morning a yellowish-white collection of pus, about the size of a pin's head, was discernible. Polyvalent anti-streptococcic serum having been wired for, yeast tabloids were given, and the suppurating focus freely cauterized away with the electro-cautery. No culture tube was at hand, and delay was too dangerous to wait for one.

The gout, which from its first appearance had been energetically treated with colchicum and other remedies by the patient's physician, Dr. Hardy, soon began to abate, slowly but steadily.

Next day a thin line of pus was visible, accentuated here and there, along the whole incision, with streaks of grey material towards the pupil. These increased in size and number, the vitreous becoming grey and turbid, the iris rotten-looking and marked with red lines of dilated vessels, the vision reduced to hand-movements, and altogether the eye possessed the aspect, which we have generally learned to consider as beyond recall. The frequent injection of large quantities of anti-streptococcic serum produced no apparent effect. I had, however, also wired for some of Wright's anti-staphylococcic vaccine (s. aureus) and I now injected one cubic centimetre of this into the patient's back. From that time improvement began rapidly to take place, being quite notably marked even the next morning. The sight gradually improved, the vitreous cleared, the turbid aqueous brightened again, the exudation into the anterior chamber became absorbed, and the pus disappeared from the incision, being helped thereto no doubt by the occasional brushings with silver nitrate which it received.

Eventually, after a small needling, some months later, the patient's vision, with optical correction, reached $\frac{7}{12}$, where it remains to this day.

What led me to try serum first was the memory of its success in the following, although very different, case:

A young woman, age 28, several years previously, was admitted to the Royal Victoria Hospital, Bournemouth, with metastatic uveitis of the left eye. The vitreous was filled with greenish-grey opacity, the iris rotten-looking and lustreless, and the anterior chamber exhibiting a streak of hypopyon. She also had an inflammatory focus, threatening suppuration, in the outer side of the right thigh. Dr. Davison, of Bournemouth, kindly examined her throat for me, as she also appeared to have some naso-pharyngeal trouble, and we concluded that the most probable door of entrance for microbes was in this region.

Anti-streptococcic serum, suggested and administered by the house-surgeon (in its early days) cleared up the eye, and the thigh symptoms entirely in less than a fortnight. At present, a case of orbital cellulitis, produced by the s. aureus, for which I was called in consultation by Dr. Davis Coles, of Boscombe, is clearing up under Wright's vaccine, although imperfectly.

Happily, the means of ascertaining the exact microbe to be dealt with in all such cases are now becoming more readily available in practice, so that we may expect cases of cure, either by the introduction of anti-bodies in sera, or by provoking their manufacture in the organism by vaccines, to be multiplied.

A CASE OF GLAUCOMA TREATED BY LAGRANGE'S OPERATION OF SCLERECTO-IRIDECTOMY.*

BY

ROBERT W. DOYNE, M.A., F.R.C.S.,

READER IN OPHTHALMOLOGY IN THE UNIVERSITY OF OXFORD.

AFTER Professor Lagrange's account of the results of his operation for chronic glaucoma, published in the September (1907) number of THE OPHTHALMOSCOPE, the description of a case on which he operated before the surgeons attending the Ophthalmic Congress in Oxford last summer may be of some interest.

The patient was a man, aged 63. He came to the Oxford Eye Hospital in May, 1907, complaining of failure of sight in the left eye for the last twelve months, getting much worse the last six months. The sight of the right eye, also, was not as good as it had been.

On examination, it was found that both pupils reacted sluggishly, and that the discs were white and cupped. His vision was:

R. V. saw marks on board, improved by minus, but still $< 6/60$. R. E. T.n.

L. V. a little light in left corner of the eye. L. E. tension possibly slightly *plus*.

The field in the right eye was generally contracted, especially above and on the nasal side (See fig. 1). He was put on eserine (gr. $\frac{1}{2}$) to both eyes, and his condition remained about stationary till July, when he was admitted to the Hospital for operation on the right eye.

The operation, as described in THE OPHTHALMOSCOPE, Sept., 1907, was performed by Professor Lagrange on July 22nd.

*J. E. Weeks (*Archives of Ophthalmology*, May, 1908, p. 336) presented to the Section of Ophthalmology of the New York Academy of Medicine on January 20th, 1908, four cases of simple glaucoma in which he had performed Lagrange's operation. Weeks was favourably impressed with the result, and should continue to employ the operation in suitable cases.—EDITORS.

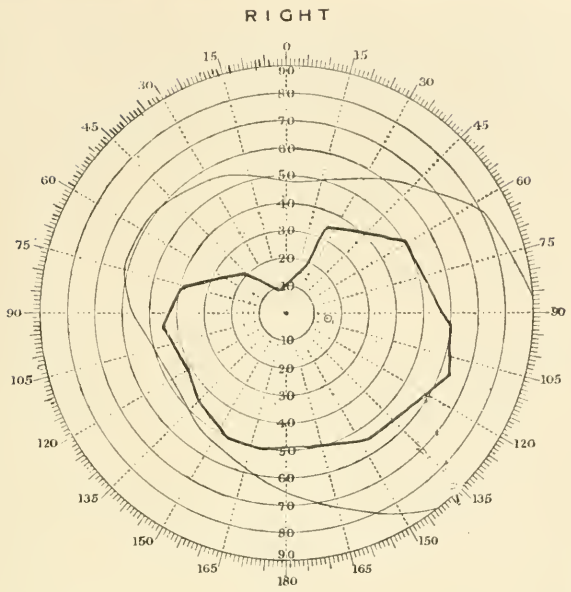

Fig. 1.

The wound healed without event, and on August 15th the eye was quiet. The patient's vision was then R. <6/60 c.—6 cyl. ax. | = 6/60, and his field had improved. September 7th.—V.R. <6/60 c.—6 cyl. ax. | = 6/36. R. c. + 5 with—6 cyl. ax. | = J. 4 fairly.

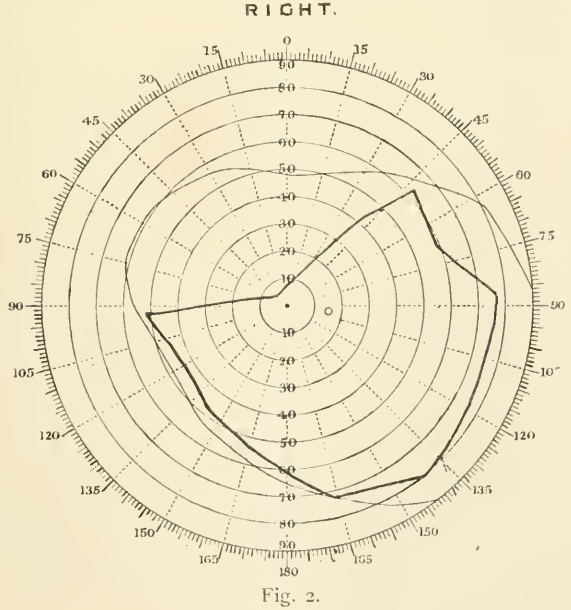

Fig. 2.

On December 9th R. <6/60 c.—6 cyl. ax. vert. = 6/24 Rt. c. reading glass J. 4 fairly well. No pain or discomfort. R.E. T.n. L.E. T. slightly fuller than R.

On comparing the field taken on this date (fig. 2) with that taken on the patient's first attendance (fig. 1), the marked improvement is well shown, whilst his vision, both near and distant, has markedly improved.

REVIEW.

THE LYMPH CIRCULATION OF THE EYE AND THE GENESIS OF GLAUCOMA.

BY

T. HARRISON BUTLER, M.D. (Oxon.),

COVENTRY, ENGLAND.

AT the present time the orthodox view of the lymphatic circulation in the eye is that the lymph is produced by the ciliary body by a process of filtration, as a transudate and not as a filtrate. The rate of production, it is thought, is a function of the blood and intraocular pressure. The iris takes no part, and the choroid little, if any, part in furnishing the fluid. The lymph finds its way into the posterior chamber, and passes through the pupil into the anterior chamber. The tension of the iris on the lens, and the slight adhesion between the two structures, offer some resistance to the flow. The aqueous leaves the anterior chamber by the spaces of Fontana and the canal of Schlemm ; it is also absorbed by the anterior surface and crypts of the iris, and by the ciliary body, which enters into the anterior chamber at its periphery. But, when all is said, the canal of Schlemm is the chief excretory channel. The circulation is slow ; there is no question of a current through the anterior chamber. Particles suspended in the aqueous move slowly in accordance with their specific gravity.

Should the normal balance between the rate of production and the rate of outflow be disturbed, the intra-ocular tension must rise or fall, as the case may be.

A high blood-pressure and dilated arterioles tend to increase the rate of transudation, and under certain abnormal conditions may determine the onset of glaucoma.

Obstruction to the outflow is, however, a far more important factor in producing high tension. This obstruction may be found at the pupil or at the angle of the chamber. The popular theory is that in primary glaucoma the filtration angle is choked and finally obliterated. Priestley Smith has shown how the

increase in size of the lens narrows the angle and strangles the circulation. When glaucoma definitely appears, the iris is closely applied to the corneal margin, and adhesions may take place.

One result of a permanently raised tension is cupping of the disc. This is usually held to be due partly to a true ectasia and partly to loss of substance, the consequence of degeneration of the nerve-fibres, consecutive to degeneration of the ganglion cells in the retina from which they spring.

The experimental and clinical facts which have rendered this hypothesis of the circulation and of its derangements the most probable, are fully set forth and critically discussed in Volume III of Parsons's *Pathology of the Eye*.

The papers now to be reviewed all bear in some way or other upon the question of the ocular circulation and the genesis of glaucoma.

Henderson and **Lane-Claypon**[1] (London) deal with the question as to whether the process of lymph formation is a mere filtration or a true secretion. They point out that when the anterior chamber is punctured and the aqueous runs out, the fluid which replaces it, instead of containing little or no proteid, is highly albuminous, the amount rising as high as 5 per cent. It also coagulates spontaneously. In all glands the act of secretion is accompanied by definite histological changes, consisting of the discharge of granules previously elaborated in the cytoplasm. Sections of a resting and an exhausted gland present very different appearances. The authors allowed the aqueous to drain slowly from an albino rabbit's eye for three-quarters of an hour. The eyes were then examined. A comparison of the normal and the drained eye showed no changes in the ciliary body in any way comparable with those seen in a gland under resting and active conditions. What was seen in the drained eye was a streaming away of albuminous material from the outermost cells of the epithelium. The changes were indicative of diminished function and disintegration rather than of increased function and secretion. The research, carried out by these authors, goes to strengthen the view that lymph formation in the eye is a physical and not a vital function—a transudation, not a secretion

Kuschel[2] (Lüdenscheid), in a previous paper which appeared in the *Zeitschrift für Augenheilkunde* for September and October, 1907, and in other papers which have recently been published in the same journal, has tried to show that the eye, by reason of the elasticity and compressibility of its component parts, regulates the lymph stream. The rise and fall of the external blood-pressure is compensated by this mechanism, just as the intermittent action of the heart is turned into a steady stream by the elasticity of the arterial system, and as the air chamber of a force-pump modifies the strokes of the pump and produces a regular outflow. Such is the perfection of this mechanism that

the normal ocular tone is not in any way influenced by alterations in the general blood-pressure. In the present paper, Kuschel describes the changes which take place in the senile eye, all of which result in loss of elasticity, and in the degeneration of organised tissues into hyaline, fibrous, and calcareous substances. The effect is that the ocular circulation must be compared with that in rigid tubes rather than in elastic ones. The intra-ocular pressure becomes dependent upon the extra-ocular blood pressure; in many regions there is stasis and congestion, and the whole circulation can easily be brought to a standstill, and glaucoma be thereby produced. The choroid becomes rigid, and the compressibility of the vitreous suffers. Under normal circumstances this structure drains anteriorly by Cloquet's canals, and room is made in its posterior portion for fluid which transudes from the choroid. The senile changes in the vitreous render this action difficult; the choroid is congested; the posterior valves are narrowed and closed and the anterior widened. All these changes tend to raise tension. Kuschel lays considerable stress upon the action of the ciliary muscle in opening the canal of Schlemm, and points out that glaucoma generally comes on during sleep when this muscle is inactive. The evil effect of atropine can be partly explained by its action in paralysing the ciliary muscle, and so narrowing Schlemm's canal.

Kuschel's second article[3] is a classification of the causes of high tension. These two papers cannot be fully understood until his earlier publications have been perused. These are long and extremely tedious. We have, however, given the general idea of his views as to the causation of glaucoma.

Henderson[4] (Nottingham) advances a different theory as to the cause of glaucoma. He believes, and advances histological evidence to prove, that the main predisposing cause of glaucoma lies in a primary obstruction and closure of the pectinate ligament. This leaves the iris, with its crypts, as the sole efferent channel for the lymph stream. At birth, the pectinate ligament is composed of a fine stroma of cells forming a delicate network on the inner side of Schlemm's canal. As years go on, the connective tissue cells undergo fibrosis, while the endothelial cells lay down a homogeneous membrane, just as Descemet's membrane is produced and *pari passu* with it. These two changes gradually close the lymph channels. The tension can now easily rise and cause pressure on the venæ vorticosæ, which gives rise to swelling of the ciliary body and relaxation of the suspensory ligament. The lens is then free to assume a more globular form, and so to narrow the anterior chamber. The salient feature in Henderson's second paper[5] is the statement that a wound of the iris never heals—it remains for all time an open wound. Accordingly, the value of an iridectomy in glaucoma is solely due to the fact that the cut surfaces open up permanent efferent channels for the aqueous humour. It

will accordingly be ineffectual if the iris be atrophied. Should this explanation be the correct one, there can obviously be no special virtue either in a broad or a peripheral iridectomy. A small, narrow iridectomy should be as effectual as the orthodox operation ; and multiple iridectomies would be even more efficient. A broad iridectomy would be even harmful, for the larger the absorbing surface left the better. In clinical support of this view, we have ourselves obtained a permanent result from two iridectomies which were neither very broad nor peripheral.

Watanabe[6] (Hiroshima, Japan) has examined seven enucleated eyes, including two of phthisis bulbi after injury, one of buphthalmia, one of secondary glaucoma, and three of primary glaucoma.

Pagenstecher, as the result of his researches, decided that :—

(1) There are forms of glaucoma in which there is no closure of the filtration angle.

(2) Closure and even obliteration of the spaces of Fontana do not *ipso facto* lead to glaucoma.

(3) As the result of prolonged high tension, definite changes generally take place in the iris and ciliary body.

Schnabel found that obliteration of the angle is by no means peculiar to glaucoma ; it appears in other conditions when iris and cornea remain long in contact.

Brailey found adhesion of the iris to the cornea in seventeen out of twenty cases of primary glaucoma, and in seven cases of intra-ocular tumour.

Although such adhesion is very common in glaucoma it is entirely absent in many cases, and so cannot be held to be the *cause* of the high tension.

In Watanabe's first case the angle was closed, but there was no glaucoma. In the second there was slight *plus* tension, and the angle was blocked. The third case had *minus* tension and no occlusion of the angle. The fourth showed slight increase of tension with an occluded angle. Fifth case—absolute glaucoma ; angle closed. Sixth, case also glaucoma in both eyes ; angle closed. Seventh case, glaucoma in each eye ; angle closed. In a case of secondary hydrophthalmia the angle was open.

As regards excavation of the optic nerve the general opinion (*von Graefe*, etc.) is that the increased pressure drives back the lamina cribrosa, but *Schnabel* points out that this cannot be the case, for there is often a deep cup in eyes when no increase of tension has been detected. He regards the process as one *sui generis*, and calls it "cavernous atrophy." It is due to degeneration of the nerve fibres, which are absorbed and form a system of vacuoles between the trabeculæ of connective tissue. This leads to a glaucomatous excavation. Watanabe found these vacuoles in one only of his cases. He does not sum up his facts, and it is difficult to decide what his conclusions are, either as regards closure of the angle or excavation of the disc.

Elschnig [7] (Prag), speaking at the German Ophthalmological Congress, said that all authorities agreed that the excavation of the disc seen in optic atrophy is a very slight one; it is hardly perceptible in the inverted ophthalmoscopic image, and does not cause a definite bending over of the vessels. There are few records of anatomical investigation of the subject. *H. Müller* has stated that the excavation is tray-like, and scarcely to be detected by the ophthalmoscope.

Elschnig has discovered that the so-called physiological excavation depends upon the form and size of the apertures in the layers of the eye through which it passes, and especially upon the degree to which the nerve is constricted in the openings. If the hole in the choroid be considerably smaller than that in the sclera, the nerve-fibres, now without medulla, fill the cavity entirely and there is no cup. If, on the contrary, the choroidal aperture be only slightly narrower than the scleral, there will be a larger or smaller excavation in the disc.

The glia and connective tissue of the optic nerve take no part in the shrinking of the nerve in optic atrophy; there is a degeneration of the nerve-fibres, and in consequence there is a very slight sinking-back of the whole disc, forming a tray-like cup. There is never a saucer-like excavation which can be detected ophthalmoscopically.

In cases where the scleral aperture is large, and there is not much constriction, the loss of medulla makes the nerve unable to fill the space entirely. In consequence, there will be a deep saucer-like excavation. Such an excavation has given rise to the general mistake as to the frequency of a deep cup in optic atrophy. But the atropic excavation is a pre-existing physiological condition.

Elschnig concludes that simple degeneration of nerve-fibres can never cause an excavation which reaches the edge of the disc, and in optic atrophy the glia and connective tissue do not participate in the process; they may even increase in amount in some cases of tabetic atrophy.

A disc which is not physiologically cupped can never become so by simply nerve-atrophy, at any rate to a degree which can be recognised by the ophthalmoscope. But a physiological cup can become more extensive superficially. Only when the glia and connective tissue takes part in the atrophy can a deep cup be produced, and this is exclusively the case in glaucomatous atrophy of the nerve, in which disease it is a constant phenomenon.

Müller has already pointed out that excavation of the lamina cannot be the cause of the glaucomatous cup, but that the enormous cavity can be caused only by atrophy of the nerve bundles.

Schnabel has shown that a typical glaucomatous excavation can and does appear in which the lamina does not alter its position.

He finds that there is a glaucomatous optic atrophy distinguished by a degeneration in which both nerve-fibres, glia, and connective tissue alike disappear, forming large cavities. Even the chief defender of the pressure theory *Schmidt-Rimpler* has described a case of glaucoma in which there was a peculiar cystic degeneration of the nerve causing a typical cup. The cup can appear as the result of this atrophy whether the lamina be ectatic or not, whether tissue be increased or remain normal.

Schnabel describes a case in which owing to proliferation of the glia and connective tissue, the excavation caused by pressure, which had produced ectasia of the lamina, was filled in again, and the final result was the absence of a cup in the disc.

Pusey[8] (Chicago), reports an identical case in which there was a glaucomatous excavation of the lamina cribrosa without resulting excavation of the papilla, and with marked papillitis. The paper is illustrated by a drawing which makes the condition clear.

Elschnig stated that it was the rule in quite recent cases of glaucoma to find the cystic condition of the optic nerve (*Kavernbildung*) well-developed long before any dislocation of the lamina had taken place. He knew of many cases of glaucomatous excavation without ectasia of the lamina cribrosa. He could diagnose glaucoma from a section under the microscope, even were there no excavation. The only real atrophic cupping of the disc is this glaucomatous cup.

Elschnig's views were not accepted by the members of the Congress, and were, indeed, hotly opposed by *Schmidt-Rimpler* and by others.

Ulbrich[9] (Prague) at the Heidelberg Ophthalmological Congress described his observations of a unique case in which Nature had provided a natural manometer, which showed any difference in pressure between the anterior and posterior chambers. In the inner and lower quadrant of the iris there was a partial coloboma, a drawing of which is given in the text of the *Proceedings*. This aperture was closed by a delicate membrane, which by oblique illumination could be seen to bulge in and out. This took place at quite irregular intervals, as, for example, is shown in the following set of observations :—

Bulged in.	*Bulged out.*
10 seconds.	9 seconds.
1 ,,	70 ,,
28 ,,	32 ,,
1 ,,	28 ,,
1 ,,	1 ,,
24 ,,	15 ,,
20 ,,	

The membrane sank in after each act of blinking, and could always be driven in by forcibly closing the lids. Dilatation and contraction of the pupil under the action of light did not alter

the position of the diaphragm. Partial dilatation with euphthalmin did not influence the lid-closure reaction. During accommodation for any object within the far-point the membrane sank in, and the degree was roughly proportional to the amount of accommodation. Under eserin this reaction was intensified; cocaine did not influence it. Atropine, on the contrary, annulled it entirely.

Pressure on the cornea drove the membrane in, pressure on the equator of the bulb pushed the retracted membrane out, but only slowly. These reactions form a valuable index to the relations of the tensions in the two chambers. They prove that there is no free circulation between the two; the pupil ring divides them into two closed sacs. We can learn much about the formation of the aqueous and the circulation of the intra-ocular fluids. The fact that the bulged-in membrane is spontaneously bulged out proves that the aqueous in the posterior chamber is secreted there—that is by the ciliary body. Pressure by the lids raises the tension in the posterior chamber, and the resistance of the pupil is overcome, allowing some fluid to enter the anterior chamber. The membrane now bulges in, and is slowly pushed out again as more aqueous accumulates. It is possible by counting the times the membrane oscillates to form an idea of the rate of secretion. The difference in tension between the chambers can be only very small, since otherwise the extremely delicate membrane would, in the course of time, have been torn. The movements of the membrane prove conclusively that the communication between the two chambers is only opened from time to time, so there is no such thing as a constant flow through the pupil. The circulation is an intermittent one. Ulbrich's communication is extremely interesting and valuable, and should be read in the original, for we have only given a mere sketch of the phenomena observed.

A. Knapp[10] (New York) records a case of acute glaucoma. The eye, a lost one, was enucleated. The iris was totally adherent to the cornea, and there was no anterior chamber whatever. The posterior chamber and the anterior part of the vitreous were filled with a semi-opaque, gelatinous fluid, which took the eosin stain. Knapp regards this not as an artefact but as an exudate. Its source, he thinks, must have been the ciliary blood-vessels. This exudate was of such a nature as to distend the posterior chamber and to produce glaucoma. The canal of Schlemm was patent, and there were no changes in the iris angle.

In the papers considered and the preliminary sketch of the orthodox view of the matter the following theories have been put forward to account for glaucoma :—

(1) **Priestley Smith.**—Glaucoma is caused by the lens growing with advancing age, and in some eyes so narrowing the filtration angle that the circulation is strangled.

(2) **Küschel.**—General senile degenerative changes so modify the eye that the regulating mechanism is disorganised and lymph-stasis ensues.

(3) **Henderson.**—Sclerosis and other changes close the spaces in the pectinate ligament.

(4) **Knapp.**—In some cases a gelatinous exudate may block the efferent channels.

Fortunately, these hypotheses are not mutually destructive. We may assume, indeed, that they are all true. In different cases of glaucoma one factor or the other may be more in evidence, and this may account for the various results obtained in the treatment of the disease.

The papers relating to the circulation of the eye only, confirm Leber's original theory as outlined at the beginning of this article.

With reference to cupping of the disc, the two theories may both be correct. Excavation may be due to pressure and to atrophy. In one case pressure may be the chief agency; in another atrophy may be the sole cause.

In Palestine a large number of eyes are seen where there is a deep excavation, and yet no appreciable rise of tension. These eyes rapidly lose all vision, and, as a rule, iridectomy is useless. Acute glaucoma is, in the reviewer's experience, relatively rare there, and absolute glaucoma only too common.

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TRANSLATION.

A METHOD OF OBTAINING SERIAL SECTIONS OF EYES EMBEDDED IN CELLOIDIN. *

BY

Dr. CALDERARO.

THE chief difficulty in the way of obtaining a good series of sections is much greater in the case of the eye than in that of any other organ, because the eye is made up of tissues of very varying density and with very various content of water, so that after dehydration, the various membranes are shrunk in varying degrees. The sclera becomes hard, and the lens harder still, and it is very difficult to cut them in thin even sections like the retina and choroid.

It follows that the greater part of the sections of the most interesting eyes are lost, and the most interesting regions are seen only in sections which are not complete, and are not well-preserved. They therefore lend themselves badly to demonstration, or to reproduction by microphotography, which is now an indispensable aid to work in pathological anatomy.

I think it may be useful to those of my young colleagues who dedicate a great part of their time to work in the pathological laboratory, to show the means which have been adopted in the laboratory of this Clinic to secure a complete series of thin sections of any globe.

We embed the globe in a large mass of celloidin, and ensure the slow evaporation of the ether by keeping the block under a bell-glass with a small open flask full of chloroform. Every three or four hours the block is carefully dried from the chloroform, which is deposited thereon. After two days the celloidin is hardened throughout, but is little contracted. We then take away the shell of pasteboard which contained the celloidin, and leave the block under the bell-glass without any chloroform; after three or four more days, according to the temperature, the block has become almost horny in hardness. We next take off the outer layers and submit it to the microtome. We obtain regularity and thinness of section by smearing with a paint-brush a syrupy solution of celloidin over the surface to be cut, and allowing it to evaporate gently. The necessary drying takes 30 seconds or a minute, and can be judged by the end of the finger, which should not adhere to the celloidin. The section should be placed in ordinary alcohol, and then in a mixture of 1 part carbolic acid and 2 parts xylol. It frees itself from the celloidin, and in this way it is possible to get an uninterrupted series of sections of extreme thinness (15-30μ) of the entire globe. It is obvious that neither the knife nor the block of celloidin should be dipped into alcohol.

*Translated from *La Clinica Oculistica*, January, 1908, by HAROLD G. GRIMSDALE, M.B., F.R.C.S.

REPORT OF THE COMMITTEE ON OPHTHALMIA NEONATORUM

OF THE

AMERICAN MEDICAL ASSOCIATION.

TO BE HELD IN

Chicago, Ill., U.S.A., June 2nd to 5th, 1908.

In the report presented to the House of Delegates by your Committee one year ago it was shown that the amount of blindness dependent upon the neglect of proper prophylactic care, or right treatment, of ophthalmia neonatorum, had not decreased in a degree proportionate to the advances which had been made on other lines in general sanitation. Emphasis was placed upon the fact that the amount of blindness, while smaller in many communities, was still so great in the aggregate as to have attracted the attention of the general government, and that recommendations had been made in the Census for the Deaf and Blind for the year 1900 urging that more general attention should be given to measures for its prevention. It was at once evident, therefore, that if this pestilence were to be attacked in accordance with the methods of modern sanitary science, exact statistical data concerning the incidence, the localities chiefly affected, and the results both in blind and disabled eyes must be first secured. In endeavouring to place this subject upon such an exact basis it was found that, except from the large hospitals, no exact data were obtainable, that there are no records to show how prevalent infections from this cause are throughout the country, and they can be only approximately estimated by the number of blind children. These are recorded in such census reports as have been taken and in the annual admissions to the schools for the blind. In the census taken by the Commission for the Blind in the State of New York in 1906, there were found to be 6,200 persons. Of these, 509 were under one year of age, while of the 3,306 blind in Massachusetts more than 20 per cent. had lost their sight before their fifth year. There was no method of determining exactly how many of these were infantile infections, but if ulcerative conditions due to bad hygiene and insufficient nourishment and the various forms of congenital blindness are excluded, it is safe to assume, as blindness in young children from other causes than these is comparatively rare, that nearly one-half of the whole number have become blind as a result of ophthalmia neonatorum.

It is the special schools, however, which form the general clearing house for most of the young blind, and in order that it might be determined what proportion of those admitted as late

as the fall of 1907 had lost their sight from this cause, a circular letter was addressed to the superintendent of each of the schools asking for a report of the causes assigned for blindness, where the investigation had been made by an ophthalmologist. The reports received were somewhat startling and singularly uniform in their results. In a very large number of the schools no trustworthy examinations were made, but from the large number of instances in which the causes were marked "unknown" and "inflammation in babyhood" there is little doubt that the proportion would run in parallel lines to those schools in which more exact reports are recorded. Among those received were the following:—

Reports from Schools for the Blind, 1907:—

Schools for the Blind.	No. of new admissions.	No. blind from ophth. neonatorum.	Per centage.
New York State School for the Blind	13	4	30·7
Penn. Institute for the Blind, Overbrook, Pa....	27	9	33 1/3
Institute for the Blind, Austin, Texas ...	(Not definite—about 10)		
Perkins Institute and Mass. School for the Blind	43	13	30
Colorado School for the Blind, Colorado Sprgs.	7	3	42·6
Western Penn. Inst. for Blind, Pittsburg, Pa.	28	8	28·57
(Percentage of total number in school)			31·37
Missouri School for the Blind, St. Louis ...	19	6	31·57
State Board Education for Blind, Hartford, Conn.	8	1	12½
(Since Creation of Board in 1893) ...			34·74
State School for Blind, Columbus, Ohio ...	61	6 (reduction of usual percentage and as low as at any time in last 12 years)	9 83
Maryland School for the Blind	13	4	30·77
(Percentage of total number in school in 1905, 25½)			
Ontario Inst. for Blind, Brantford, Ont; ...	23	5	21·74
(Percentage of total number in School)			24·7

The average, then, of the new admissions in the fall of 1907 *to the ten schools in which exact records were kept, and representing eight States and the Province of Ontario was* 25·21 *or one-quarter of the whole number needlessly blind.*

That these are not unusual results is shown by the following report from the Pennsylvania School for the Blind for the past eight years.

1900 ...	11 out of 25=44 p.c.	1904 ...	15 out of 56=25 p.c.
1901 ...	10 out of 26=35 p.c.	1905 ...	21 out of 42=50 p.c.
1902 ...	9 out of 39=23 p.c.	1906 ...	12 out of 38=31 p.c.
1903 ...	14 out of 50=28 p.c	1907 ...	9 out of 27=33⅓ p.c.

The average percentage for these eight years is 33.36% of the whole number admitted. As this enormously high proportion of blindness due to ophthalmia neonatorum is found in States maintaining the highest standards of medical education and general sanitation, there is no doubt whatever that when exact statistics can be obtained at least as large a percentage due to this cause will be found elsewhere throughout the country.

Your Committee realised, therefore, that if this universal pestilence which is producing such disaster everywhere is to be controlled, the attack must be planned in accordance with the same sanitary thoroughness that would obtain in the event of a more localized endemic infection. That the disease and its consequences exist everywhere makes the problem one differing in magnitude but nowise in method.

Three Things Necessary.

Three things seem to be necessary :

First, that exact data concerning its incidence and results be secured in every State.

Second, that as it is a problem vitally affecting the State in making dependents of those who might be productive citizens, its control rests with the State through its department of public health.

Third, that there be secured united and concurrent action for its control on the part of all of those who know what to do and are willing to aid in stamping out this pestilence.

In order to obtain the first your Committee addressed a circular letter to the president and secretary of each State Medical Society asking that three things be done. In this the president was earnestly requested, first, in his annual address, to urge upon the physicians their duty in actively supporting such measures as may be inaugurated by the health department of the State to wipe out this disease. Second, that he appoint a committee having as its chairman one who would assume responsibility for his State in securing effective work through the physicians and in harmony with the health department of that State ; and, third, that he send the names of the Committee as soon as appointed to the chairman of the Committee on Ophthalmia Neonatorum of the American Medical Association. A similar communication was sent to the department of public health in each State in which it was especially urged, as a preliminary step, that enquiries concerning ophthalmia neonatorum be instituted in that State and the summarized conclusions forwarded to this Committee. In order that there might be uniformity of plan it was urged that answers be returned to the following enquiries and the summarized conclusions sent to this Committee.

Do State or local laws exist in . . . concerning the control or surveillance of midwives or other unlicensed practitioners ?

Are birth reports regularly filed by physicians ? By midwives ?

How many births were reported in the State of . . . in 1906 ?

In how many of these did ophthalmia neonatorum develop ?

In how many of these cases was prophylaxis employed ?

What prophylactics were used, and in what strength ?

What results followed ?

Are records regularly kept in the hospitals concerning the development, treatment and results of ophthalmia neonatorum ?

If not, will you not require that such records be kept ?

The answers to this letter were immediate and gratifying. Within two weeks responses were received from representatives of nearly two-thirds of the States, expressing their hearty approval of the efforts which were being made to control ophthalmia neonatorum and pledging their co-operation as far as it might be possible to give it. In many of them, Committees were immediately appointed, in some of them, as in Kentucky, this work was already under way, but to obtain the necessary facts in many instances special appropriations would be required, and to take effective action expense must be incurred. While these would not be large they could be secured only by the efforts of those of local prominence in the community. The necessity, then, for the third point which was urged in the former report, became apparent, *viz.*:—concerted and co-ordinate action on the part of all interested. The way to control this pestilence in all of the States is to control it in each of the States. With that idea in view, your Committee immediately began to organise national forces. There had already been a joint meeting on the subject by the American Ophthalmological and Amerian Obstetrical Societies at Washington. By invitation the subject was presented at the meeting in Detroit of the American Obstetrical and Gynæcological Association; in Louisville, at the meeting of the American Academy of Ophthalmology and Oto-Laryngology; at Atlantic City before the American Public Health Association. Among the lay-organizations which had considered it were the American Association of Workers for the Blind and the Mothers' Congress recently held in Washington, the latter based upon the idea that being a social disorder and one which would properly come under the control of the State authorities through its public health department, it was essential that there should be a wider general knowledge concerning its nature, its cause, and its prevention. All of these bodies have appointed committees to co-operate in controlling it. Letters have been received from the Philippines, from the Canal Zone, and from Hawaii promising the hearty co-operation of the representatives in those territories in the work outlined by the committee. Dr. Bracken, of Minnesota, has said: "*The health officers in the various States will take any action which they are asked to take by representative men in their own community and in whom they have confidence.*" It becomes imperative, therefore, that men representing the obstetricians and ophthalmologists should join with the health authorities in building up the skeleton organization which has already been formed throughout the country.

The matter of specific details as to methodology is of secondary importance and must be left largely to the judgment of the men in each State. Your committee can only suggest general plans of procedure. It would seem important that certain specific things be carried out in every State and territory throughout

the Union. The first step of importance is to secure a general *registration of births.* Accurate and complete vital statistics must form the basis of successful effort on these lines. In all of the States are these records defective. In most of them none are kept whatever. The importance of accurate vital statistics as a prerequisite for any effective work in controlling an endemic infectious disease can hardly be over-estimated. In a most striking address on this subject Crissy L. Wilbor, M.D., Chief Statistician of the Bureau of Census, Washington, said at the meeting of the American Public Health Association in 1907 : "Vital statistics is the Cinderella of modern public hygiene. She sits in the chimney-corner and sifts the ashes of dusty figures, while her proud sisters, bacteriology and preventive medicine, go to the ball and talk about the wonderful things they have done. But the Prince's slipper fits no other foot, and when we descend to facts, and not mere empty bombast, about the results of administrative work, vital statistics, and accurate vital statistics, are our sole dependence. The accurate registration of vital statistics is an indispensable requisite of an efficient modern public health service, and the Congress of the United States, by joint resolution, has called upon the authorities of the various states to co-operate in establishing such registration. *It is the most important of all sanitary measures and should be unremittingly urged until successfully carried out in every State of the Union,*" and, as he goes on to show, in not one single State is this condition achieved. Dr. Wilbor asks whether the births of all Americans shall be *registered* as are those of human beings in all *civilised communities except the United States*, and expresses the hope that we may ultimately secure a modern system of registration which will compare favourably with that which the Japanese possesses to-day. The registration of the birth is necessary in determining the vital statistics, but it is of no less value in putting the public authorities in touch with the accoucheur, whether doctor or midwife, in keeping accurate records of the births supervised by midwives, who and where these midwives are, and what their character and fitness for their work.

This makes possible the second essential, the *registration of midwives.* In most of the large cities nearly half of the births are attended by these women. In New York City over 40 per cent., and in Chicago, among the Italians, who are most prolific, 86 per cent., of the births are reported by midwives. Many of these are ignorant, untrained, and unclean. The blindness of the child is but one of the many disasters that attend their mal-administrations. Every midwife should therefore be required by law to fit herself for the work which she assumes to do. If the uncleanly cannot be made to adopt sanitary methods, they, together with the vicious and immoral, should be put out of business. Every midwife should be licensed and registered.

She should be compelled to report every birth and every case of ophthalmia as soon as it develops, as is required by the Howe Law, which is now in the Statute Books of many States She should be trained as to the best method of conducting the infant's toilet, especially as to the care of the eyes. The license should not be regarded as a diploma, but as a sanitary police measure maintained by the board of public health. In her report of the birth she should be obliged to state whether or not a prophylactic against ophthalmia neonatorum had been employed, which should be required in all except premature births. If the midwife is to be held responsible for her neglect to use proper prophylactic measures under penalty of losing her license, as she should be, then she should have the prophylactic put in her hands with fullest directions for its use. Some plan should be arranged, moreover, by which cases reported by midwifes should receive immediate medical treatment. The poor should be placed under the charge of the physicians of the health department, while others should be advised of the danger to the child's eyes that would result from neglect, and both should be urged by the health department immediately to secure adequate medical care.

It does not seem practicable to put ophthalmia neonatorum on the list of communicable diseases. Considering the fact that it is so frequently of gonorrhœal origin, many physicians feel that to report it, with the name of the parents, would be a breach of professional confidence and it would add, moreover, to the burdens of an already overburdened profession, but for the health officer to take a semi-annual canvas of the number of cases occurring in the practice of the physicians, midwives, and institutions of the locality, together with a statement of what, if any, prophylactic was used, with the resulting condition of the eyes in each instance serves the same end and has a double value—namely, in serving to impress upon each one receiving the card the need of prophylaxis ; and in obtaining statistics from which important conclusions may be drawn. It affords an opportunity, moreover, of conveying information to accoucheurs that often may not, and soon would not, be necessary, but meanwhile it would be instrumental in saving eyes that would otherwise be lost. But in its ultimate analysis the solution of the problem would seem to lie not primarily in coercion but in guidance. Dr. Juan Santos Fernandez, the distinguished Cuban ophthalmologist, touching on this subject, has said : "The important thing is to bring before the public mind, by means of constant propaganda, a knowledge of the danger to a recently born child who is at all affected as to the eyes, the great harm which a husband affected with gonorrhœa may cause his wife or offspring, and, side by side with these, to call the attention of the family to the facilities which the authorities will furnish them to guard against blindness. This, he continues, would be worth

much more than penalties, and if there were a physician paid by the State (and in every county in the United States may such a health officer be found) to attend to the poor children affected, or to prevent their becoming affected, and this fact were to become known to the poor they would surely seek his assistance and he could fulfil his duties."

In the City of New York it was found that municipal affairs were being conducted inefficiently, extravagantly, and in some instances dishonestly. A great reform is being quietly wrought. It is based upon the principle that when right-doing is made easier and simpler and more comfortable than wrong-doing, that human effort will follow the lines of least resistance. It takes into account, moreover, the weakness of human nature which we must recognize if we would discount success. It also builds somewhat upon the belief that the great majority of men would rather do right than wrong, would choose the better rather than the worse, if either were equally easy. This we must do in making almost automatic the working of every health department in relation to infantile ophthalmic infections.

As to the manner in which this might be done, the conclusions in detail which are proposed, may be broadly outlined as follows :—

REGISTRATION—
- (a) Births.
- (b) Midwives.
- (c) Physicians.

EDUCATION—
- (a) Midwives.
- (b) Mothers.
- (c) Medical profession.

PREPAREDNESS—
- (a) Proper dissemination of prophylactic.

CO-OPERATION—
- (a) United and concerted action in carrying these provisions into effect.

First.—It is necessary to secure the enactment of laws in each State or Federal Territory, requiring the registry of births and placing the supervisory control and licensure of midwives in the Boards of Health, requiring that all midwives be examined and registered in each county, and that they be required immediately to report each case of ophthalmia occurring under their ministrations under penalty for neglect if found guilty, of fine and for a subsequent offence, forfeiture of license. In all States the registration of physicians should be maintained with equal thoroughness.

Second.—The distribution by health boards of circulars of advice to midwives and mothers giving instructions as to the dangers, method of infection, and prophylaxis of ophthalmia neonatorum. This has been most effectively carried out by private organizations in England and France. It has also been done to some extent in New York and other cities, but never as a general movement.

Third.—The preparation and distribution by the health boards of ampoules or tubes containing the chosen prophylactic, with specific directions for its use. The consensus of opinion on the part of both obstetricians and ophthalmologists is that this should be some solution of silver. The vast majority prefer the one per cent. solution of the nitrate. The special chemical used, however, is merely advisory; each health department should be free to use whatever prophylactic it should deem best. It should, moreover, be provided with outfits for taking cultures from the eyes or suspected secretions on request of those making application for its use.

Fourth.—To insist upon the maintenance of proper records in all maternity institutions and other hospitals in which children are born. If reports were filed with the department of health as to the number of infections, the nature of the prophylactic employed, and the results as to the corneal integrity, not only would the statistics thus obtained be of great value, but the fact that such records were required would cause greater care on the part of the authorities in regard to cases of this character.

Fifth.—Periodic report to boards of health by all physicians engaged in obstetrics of the number of cases of ophthalmia neonatorum that has occurred in their practice within a specified time, whether or not a prophylactic was used—if so, what—together with the result.

Sixth.—Of great importance is it that there may be more widespread knowledge concerning ophthalmia neonatorum and its dangers. Helen Keller voices a very proper public sentiment when she says: "The problem of prevention should be dealt with frankly. Physicians should take pains to disseminate knowledge needful for a clear understanding of the causes of blindness. The time for hinting at unpleasant truths is past. Let us insist that the States put into practice every known and approved method of prevention, and that physicians and teachers open wide the doors of knowledge for the people to enter in. The facts are not agreeable reading. Often they are revolting. But it is better that our sensibilities should be shocked than that we should be ignorant of facts upon which rest sight, hearing, intelligence, morals, and the life of the children of men. Let us do our best to rend the thick curtain with which society is hiding its eyes from unpleasant but needful truths."

Seventh.—and most essential is organized and concerted effort throughout all of the States of the Union. The skeleton of such an organization has already been formed and the plan has met with the general approval of the profession in nearly two-thirds of the States. If the chairman of the sections on Ophthalmology, Obstetrics, and Hygiene were to select a representative in each State and Territory to support and strengthen the movement already under way, a conference of these representatives might be held at this meeting in Chicago and general plans laid down

which could be carried out concurrently. As the chairman of each of these sections has already given his approval to this report, such an organized movement could be started without delay, and the inspiration and incentive of united effort would do much to carry it to an effective conclusion.

A Congress for the Prevention of Blindness.

It would seem, however, that the result which we have been struggling so many years to accomplish for the control of this disease throughout the world could be greatly facilitated if when this is done the general organization of forces everywhere could be brought together in a congress devoted to the prevention of unnecessary blindness. When Mr. Simeon Snell, in a communication to the British Medical Association (1907), reported that of 333 inmates of the Sheffield School for the Blind 137, or 43.36 per cent., had been blinded by ophthalmia neonatorum, these startling figures lead to the unanimous passage of a resolution, proposed by Mr. Sydney Stephenson and seconded by Dr. Karl Grossmann, "that in the opinion of the Section on Ophthalmology the time had come for the British Medical Association to take action towards the prevention of ophthalmia neonatorum."

With the organization already begun in the United States and a similar body of men at work upon it in Great Britain, and all of continental Europe actively engaged in combating this disease, it would seem that an international congress with Government and with other lay representatives would accomplish more in a single conference than individual effort has been able to accomplish in many years. Such a congress should include for its consideration not only ophthalmia neonatorum but all forms of preventable blindness, such as trachoma, which has become such a menace that the National Government has enacted stringent measures for guarding our sea-ports against its introduction into this country. It should consider the various traumatisms, including injuries which disable working men during the productive period of their lives by the failure on the part of employers to use suitable protective devices, and a study of all such forms of blindness as intelligent effort might limit. It should provide measures for the control of the use of toy pistols, explosives, and other means of destroying human eyes; for the protection of the public by warning and otherwise against the dangers of wood alcohol and other toxic substances producing blindness, as well as such other subjects relating to the hygiene and sanitation of the eyes as might be deemed wise. If such a congress were to be held in the city of Washington in the year 1910 its possibilities might be outlined at the Ophthalmological Congress to be held in Naples in May next, and a plan of procedure might be adopted which if carried out throughout the world would do more than any other single movement in lessening the unnecessary blind-

ness of the world. Your Committee feels, therefore, that in organizing this work much remains yet to be done. It would ask the support of this body in carrying out the programme outlined and request that more time be given in which to carry on the work already begun.

Approved: DR. WM. H. WILDER,
Chairman, Section on Ophthalmology.

Approved: DR. WALTER B. DORSETT,
Chairman, Section on Obstetrics and Diseases of Women.

DR. W. C. GORGAS,
Chairman, Section on Hygiene and Sanitary Science (in Canal Zone).

Signed:
F. PARK LEWIS, *Chairman.*
J. CLIFTON EDGAR,
F. F. WESBROOK,
Committee.

COMMITTEES ON OPHTHALMIA NEONATORUM.

Resolutions passed by Co-operating Organizations.

List of States and Territories which will support a Concerted Movement.

COMMITTEES ON OPHTHALMIA NEONATORUM.

CALIFORNIA—
Dr. Kaspar Pischel, 1817 California Street, San Francisco, California.
Dr. G. E. Brinckerhoff, 1169, Broadway, Oakland.
Dr. Thomas McCoy, Bryson Building, Los Angeles.

COLORADO—
Dr. E. W. Stevens, Chairman, McPhee Building, Denver.
Dr. William H. Sharpley, Health Commissioner, Denver.
Dr. Hugh Taylor, Secretary, State Board of Health, Denver.

KENTUCKY—
Dr. S. C. Dabney, Louisville.
Dr. J. A. Stucky, Lexington.
Dr. L. C. Dunn, Henderson.
Dr. T. H. Aud, Middleboro.
Dr. Adolph C. Pfingst, Louisville.

MAINE—
Dr. H. F. Clough, Bangor.
Dr. J. F. Hill, Waterville.
Dr. F. Y. Gilbert, Portland.

Missouri—
Dr. P. I. Leonard, St. Joseph.
Dr. R. McLemore, Nevada.
Dr. J. H. Thompson, Kansas City.

American Academy of Ophthalmologists and Oto-Laryngologists—
Dr. A. A. Hubbell, Chairman, Buffalo, New York.
Dr. A. R. Baker, Cleveland.
Dr. Edward Jackson, Denver.

American Public Health Association.
Dr F. Park Lewis, Buffalo, New York.
Dr. C. A. Harper, Madison, Wis.
Dr. H. D. Pease, Albany, New York.

American Association of Obstetricians and Gynæcologists.
Dr. R. E. Skeel, Chairman, Cleveland.
Dr. Magnus A. Tate.
Dr. O. H. Elbrecht.

American Ophthalmological Association.
Dr. Lucien Howe, Chairman, Buffalo, New York.
Dr. Edward Jackson, Denver.
Dr. P. A. Callan, New York City.

American Association of Workers for the Blind.
Dr. F. Park Lewis, Chairman, Buffalo, New York.

National Congress of Mothers.
Committee not yet appointed.

American Association of Obstetricians and Gynecologists.

Your Committee appointed to consider the question of ophthalmia neonatorum begs to make the following report :—

Whereas, a committee has been appointed by the American Medical Association on legislative measures to prevent ophthalmia neonatorum, and

Whereas, it is recognized by this Association that this disease is preventable, and

Whereas, the Health Department of each State is the properly constituted authority for dealing with preventable and communicable diseases ; therefore be it

Resolved, that it is the expression of the sentiment of this Association that definite steps should be taken to secure the enactment of such laws in the various States as shall compel the use of proper measures of prophylaxis by the attendant at every confinement, the execution of such laws to be under the jurisdiction of the State Boards of Health ; and we hereby pledge our assistance and co-operation to the Committee of the American Medical Association in its undertaking.

(Signed) R. E. SKEEL,
O. H. ELBRECHT,
MAGNUS A. TATE,
} *Committee.*

Report of the Committee of the American Academy of Ophthalmology and Oto-Laryngology appointed to co-operate with the Committee of the American Medical Association on Legislative Measures to Prevent Ophthalmia Neonatorum.

Your Committee presents the following for the consideration of this Academy :—

It is well known that ophthalmia neonatorum is the cause of a large proportion of blindness in the United States. No fact in medicine, however, has been more thoroughly established than that it is a preventable disease in a vast majority of cases. Granting this, your Committee submits that every State should enact laws having for their purpose the adoption of measures for the prevention of its development, at least, in public institutions where obstetric cases are received, and in the practice of midwives. Precedence has long existed in enactments requiring the carrying out of certain methods and treatment to prevent small-pox and other infectious diseases.

The State Department of Health seems to be the proper authority for establishing the necessary rules, regulations and ordinances and enforcing their observance, and for publishing and distributing appropriate information and instruction on the subject.

This Committee, as will be seen by the draft of law hereby suggested, is of the opinion that legislative action on this subject should, at present, be limited to the obstetric practice in public or semi-public institutions and to the practice of duly licensed midwives, otherwise leaving the use of prophylactic measures to the judgment and discretion of physicians.

This Committee further believes that the specific methods to be followed in the prophylaxis of ophthalmia neonatorum should not be stated in any law, but should be left to the intelligence and judgment of the Department of Health of each State respectively, presuming that it will act in accordance with the most advanced existing knowledge.

The following form of law is recommended to the Committee of the American Medical Association as a basis for legislative action, to be modified to suit the needs and legal situations in each State, and the members of this Academy are urged to co-operate, both individually and collectively, with said Committee to secure its enactment.

An Act to Prevent Inflammation of the Eyes of the new-born Babe, or so-called "Ophthalmia Neonatorum."

Section 1.—The Department of Health of this State is hereby vested with power and authority to publish and distribute such information and instruction, to furnish such remedies, and to make such rules, regulations and ordinances as it may deem

expedient to prevent the development of inflammation of the eyes of the new-born babe, or so-called ophthalmia neonatorum, in public hospitals or institutions in which midwifery is practised either wholly or in part, and in connection with the practice of legally licensed midwives.

SECTION 2.—Said Department of Health is authorised to enforce its rules, regulations and ordinances at the expense of the state.

SECTION 3.—Any person violating any rule, regulation, or ordinance of said Department of Health regarding the prevention of ophthalmia neonatorum shall be guilty of a misdemeanor.

This act shall take effect immediately.

ALVIN A. HUBBELL, *Chairman.*
ALBERT R. BAKER, } *Committee.*
EDWARD JACKSON, }

From the proceedings of the Thirty-fifth Annual Meeting of the American Public Health Association :—

RESOLVED, That a committee of three be appointed by this Association to co-operate with American Academy of Ophthalmology and Oto-Laryngology, the American Association of Obstetricians and Gynæcologists, and other similar national organizations for the prevention of blindness. (Referred to the Executive Committee.)

MOTION.—The Executive Committee recommends that the resolution calling for the appointment of a committee of three of this Association to co-operate with the committee of the American Medical Association on ophthalmia neonatorum with reference to measures for the prevention of this disease, be adopted, and that such a committee be authorized.

It was moved that the resolution be adopted, and the recommendation concurred in. Seconded by several and carried.

NATIONAL CONGRESS OF MOTHERS.

Whereas the infectious and preventable disease of infants known as ophthalmia neonatorum, or "baby's sore eyes," is the cause of nearly one-tenth of the blindness in the United States, and has caused the destruction of the eyes of one-third of the children in the schools for the blind, and

Whereas this prodigal waste of human eyes is due to the neglect of simple sanitary precautions which should always be taken at the birth of the child, therefore be it

RESOLVED that the Congress of Mothers urge upon the health authorities of the various States an aggressive and persistent movement to wipe out this prolific cause of blindness, and

RESOLVED that the mothers in this Congress assembled pledge their support of all measures designed to protect the eyes of new-born children from needless infection, thereby saving from blindness many yet unborn.

States from which replies have been received to circular letter in support of concerted movement :—

ARIZONA.—State Medical Society.
CALIFORNIA.—State Medical—Committee.
COLORADO.—State Medical and Health Department—Committee.
DISTRICT OF COLUMBIA.—Health Department.
FLORIDA.—State Medical.
IDAHO.
ILLINOIS.—Health Department and State Medical.
INDIANA.—Health Department.
IOWA.—State Medical (will appoint Committee).
KENTUCKY.—State Medical—Committee.
LOUISIANA.—State Medical.
MONTANA.—State Medical.
MASSACHUSETTS.—State Medical.
MINNESOTA.—State Medical and Health Department.
MAINE.—State Medical—Committee.
MISSOURI.—State Medical—Committee.
MARYLAND.—Health Department.
MISSISSIPPI.—State Medical.
MICHIGAN.—Health Department.
NEVADA.—State Medical.
NEBRASKA.—State Medical.
NEW YORK.—State Medical.
NORTH CAROLINA.—State Medical.
NEW JERSEY.—State Medical.
OREGON.—State Medical.
OHIO.—Health Department.
OKLAHOMA.—State Medical.
PENNSYLVANIA.—State Medical.
RHODE ISLAND.—Health Department
PANAMA.—National Government.
TENNESSEE.—State Medical.
VENMONT—State Medical.
} Reports received through Col. W. C. Gorgas, officer in charge, from all of the stations and hospitals in the department.
WASHINGTON.—State Medical and Health Department.
WYOMING.—
WEST VIRGINA.—State Medical.
WISCONSIN.—State Medical.
HAWAII.—Territorial Medical and Health Department.

CURRENT LITERATURE.

NOTE.—Communications of which the titles only are given either contain nothing new or else do not lend themselves to abstract.

I.—THE SUPERFICIAL SENSIBILITY OF THE EYEBALL.

Bonamico, M.—On the sensibility of the ocular surface. *Annali di Ottalmologia*, Vol. XXXV, fasc. 3-4, p. 223 to 236.

Having passed in review the classical works of Frey, of Nagel, and of Krückmann on the sensibility of the cornea and conjunctiva, **Bonamico** (Padua) relates his own experimental investigations. He has studied the sensibility of the cornea and of the conjunctiva separately, as regards mechanical, thermal, and chemical stimuli. The sensibility of the cornea is much greater than that of the conjunctiva, but more in the direction of the sense of pain than of touch; mechanical stimuli which are not even perceived by the conjunctiva provoke painful sensation of the cornea. The thermic sensibility of the cornea is manifest especially with regard to heat; on the other hand, the conjunctiva is more sensitive to low temperatures. The tactile sensibility of the palpebral conjunctiva is very dull, even more so than the skin of the dorsal region. The corneal sensibility appears to be maximal at the centre and to diminish slightly towards the limbus. In pathological processes of the surface of the eyeball the tactile and thermic sensibility of cornea and conjunctiva diminish while the sense of pain increases. It is worth noting that it is sometimes possible by touching to provoke the palpebral self-defence reflex without any subjective perception of touch or pain on the part of the patient. A. ANTONELLI.

II.—THE YELLOW COLOURATION OF THE MACULA.

Chevallerau, A. and Polack, A.—On the yellow colouration of the macula. (De la coloration jaune de la macula.) *Ann. d'oculistique*, T. CXXXVIII, p. 241, octobre, 1907.

With a view to discovering whether yellow pigment really exists in the macula lutea of human eyes, **Chevallerau** and **Polack** have examined seven retinæ from patients varying in age from 27 to 65 years. In six cases the enucleations were performed for painful affections of the anterior part of the eyes, while the seventh eye was a healthy one which was enucleated to allow of the removal of an orbital tumour

In each case the eyeball was divided equatorially, the retina removed, spread on a glass slide and examined within two minutes of the removal of the eye from the orbit, when an intense yellow colouration with diffuse edges was at once seen in the macular region. This coloration gradually diminished in intensity, but was still present at the end of several months. When placed in front of a spectroscope, the pigment caused darkening of the most refrangible part of the spectrum, starting from greenish-blue, the maximum of absorption being in the blue region. The authors consider that the failure of some observers to demonstrate this colouration has been due to their examining retinæ against the dark background of the choroid. They discuss the entoptic and physiological arguments for and against the existence of yellow pigmentation of the macula, and express the opinion that such pigment, although it diminishes the illumination of the retina, corrects the chromatic dispersion of the eye by cutting off all the spectrum, except the red end, for which it has been shown to be focussed. R. J. COULTER.

III.—DOES INCIPIENT CATARACT EVER DISAPPEAR?

Connor, Leartus.—Does the opacity of incipient cataract ever regain transparency? *Journal American Medical Association*, July 6th, 1907.

"Our problem (Connor says) is not the mere restoration of vision in a cataractous eye, as this may occur from absorption of the cortex or in traumatic opacity; nor is it the clearing of a diffuse cloudiness of the lens, as this has been observed to follow correction of eye strain. It is rather the partial or complete transformation of opaque striæ with diffuse opacity into clear lens. Such opacities are seen in the lenses of individuals past middle life, and in some cases are associated with such general diseases as diabetes, Bright's disease, syphilis, and arterio-sclerosis; some with uncorrected refractive defects, and others with as yet undefined conditions."

"Progress," he tells us, "in the non-surgical management of incipient cataract calls for the settlement of two questions: First, do the opaque striæ of incipient cataract ever become transformed into transparent lens? Second, what are the conditions under which transformation occurs?" In regard to these, he states that "if the striated opacity of incipient cataract ever becomes transparent, it will do so again under the same conditions, and a basis be established for intelligent management of

such cases. As yet, we know little of the conditions associated with the development of senile cataract, and less still of those attending its transformation into clear lens; both conditions are closely related to lens nutrition, and may be either within the eye or outside. Those within, like choroiditis, may defile the lymph by which the lens is nourished, or disturb the action of capsule cells or lens fibres, or derange the intraocular circulation of blood and lymph. Those without either disturb the quality or quantity of blood and lymph currents to and from the eyeball, or the innervation, as in diabetes, renal disease, and arterio-sclerosis."

Based upon several observations which were out of the ordinary, a letter of inquiry was sent to a number of ophthalmic surgeons, asking if they had seen "the opacity of incipient cataract regain transparency," attention being directed to the presence of striæ in the opacity. To this were received 55 negative answers, 57 negative with comments, and 34 affirmative replies.

"The replies are given in three groups: first, those reporting cases of opacity with opaque striæ in lenses that regained transparency, in whole or part; second, those reporting cases of opacity of the lens in which the lens regained transparency—striæ not being mentioned; third, those reporting cases of partial restoration of lens transparency." Ten observers reported 23 cases in which they had seen striæ of incipient cataract disappear from one or both lenses, "taking with them the diffuse opacity." Twenty-six observers reported about 84 cases in which they had seen the diffuse opacity of the lens in incipient cataract regain transparency—no mention being made of striæ; while 14 observers reported 33 cases of incipient cataract regaining partial transparency.

"Thus" (the author says), "including my cases, 51 observers report about 147 cases, in which the opacity of incipient cataract has regained transparency in whole or in part."

"After eliminating all indefiniteness from some of the reports, enough remains to show that opaque striæ, with or without adjacent lens opacity, have been seen to fade into clear lens substance."

"All ophthalmologists grant that the phenomenon is rare; all agree that it is most frequent at the earliest stage of development."

"In most cases the transformation of lens opacity into clear substance was quite 'unexpected;' . . . ."

"The demonstrated fact of regained transparency of the lens institutes the inquiry: How was the thing done? It also suggests the obligation of making a closer study of the conditions under which cataract develops." C. A. O.

IV.—SIMULTANEOUS CONTRAST IN COLOUR-VISION.

Raehlmann, E.—On simultaneous contrast in colour-vision. (Der simultane Kontrast in Farbensehen.) *Zeitschrift für Augenheilkunde*, Januar, 1908.

Raehlmann in a polemical article on "Simultaneous Contrast in Colour-Vision," which occupies some sixteen pages of the *Zeitschrift*, adds little to our knowledge of this somewhat obscure subject. His contribution is of a negative rather than a positive order, and is mainly an acrimonious criticism of Heine's and Lentz's book, *Ueber Farbensehen, besonders der Kunstmaler* (Jena, 1907). In fact, to understand Raehlmann's objections fully, it is almost necessary to read this "*brochure*," as he designates it.

Raehlmann commences with some general remarks, and then adds a historical retrospect. Simultaneous colour contrast is not to be explained by any known theory of colour perception; the Young-Helmholtz and the Hering theories fail to account for the observed phenomena. Edridge-Green's theory is not mentioned by the author. Simultaneous contrast plays a very important part in colour-vision, a part which modifies all neighbouring tints in nature, and blends them into a harmonious colour scheme. Contrast colours are essentially those which harmonise, and they are of a subjective character. Modern text-books of physiology studiously avoid any explanation of simultaneous contrast. This was not the case during the dawn of the science. Then colour-vision, and incidentally colour-contrast, were both theoretically discussed and experimentally investigated. Subjective colours were differentiated from objective, and it was well understood how greatly the latter were influenced, even dominated, by the former.

To explain the nature of vision, Aristotle, postulates a tenuous medium permeating space and saturating all substance. He imagines that light sets the particles of this medium in motion, and that the moving corpuscles act upon the eye and induce the subjective sensation of light. The quality of the movement determined the colour experienced. Plato, Empedocles, and Epicurus voice the subjective side of sensation: an internal fire constantly emanates from the eye which meets the fluid which issues from all luminous bodies. The activity of the eye is stimulated by white, inhibited by black.

Roger Bacon, Robert Boyle, Cartesius, and Grimaldi follow Aristotle; Cartesius suggesting that colour is a function of the rapidity of the motion.

Castel, Newton's great rival, was ridiculed by Voltaire, a pupil of Newton's. Goethe tried in vain to champion Plato's views. Newton was a staunch Aristotolean; Goethe equally true to Plato. In Goethe's colour theory, the subjective side of

colour perception is insisted upon; colour sensations are the product of ocular activity. The crucial experiments made by Newton and his followers proved conclusively that Aristotle's views were the more correct. Newton, however, only investigated the physical basis of colour vision, and the optical arrangements of the eye; the physiological reaction of the organ had for him little interest. Here Goethe emerged victorious from the fray. He realized the subjective action of the eye in colour vision as the fundamental basis of harmony. "Harmony must be sought for in the eye of mankind, it depends upon the internal action and reaction of the organ, in accordance with which activity one colour produces another."

Raehlmann himself, after a series of experiments upon numerous individuals (v. Graefe's *Archiv für Ophthalmologie*, Bd. XXI and XXII, 1873) has shown that colour perception varies greatly in different persons, and that individuals showing every grade of abnormal colour perception can be found between those who have normal colour vision and the colour blind.

Heine and Lentz investigated the question of contrast sensation and more especially the "threshold value" of contrast, that is the amount of a certain colour in a mixture which is necessary to induce the subjective sensation of its complement. These *liminal* values were obtained in the following manner: Marbe's rotating disc with coloured sectors was used, and the sector for the colour under examination was increased from zero up to the area which produced a sensation of that colour or its complement. This would be the liminal value. For example if the disc be arranged for green, the red contrast colour might, and often did, appear when the green sector occupied 10° of the disc, the exciting green might appear at 25°. At 10° the threshold is attained when the green is sufficiently saturated to act upon the eye as red. The question arises, are we to set this figure down as the liminal value for green? for a colour sensation is first appreciated at this moment, although, perhaps fortuitously, the sensation is not that of green but of red. The authors think this should not be done. As soon as red is seen, whether it be a complemental contrast, or a primary red, we have the liminal value for red. Raehlmann objects that pigmentary colours are never pure, and results obtained by their use, unless they have been previously submitted to spectral analysis, are of little value. That multiple experiments of this nature made by daylight are never comparable, for the illumination is never similar. They should be made in a dark room *where simultaneous contrast is entirely absent.* A double illumination is always necessary to obtain contrast effects. The intensity of the second light must bear a definite proportion to that of the primary. The sensation of simultaneous contrast is a function of other retinal elements than those which are excited by objective colour. Simultaneous contrast is a superficial function of the retina. Raehlmann merely

makes these statements, he does not attempt to prove them. He is apparently chiefly annoyed with Heine and Lentz because they are ignorant of his own work, and of the many monographs he has issued on the subject.

Later in the paper he discusses the relation between art and colour blindness, and the influence of fashion in art and music. Heine's and Lentz's views on the colour vision of artists are dissected, and, finally, even the bibliography which they have appended to their *brochure*, is held up to ridicule. The authors have appended only one of Raehlmann's works!

T. HARRISON BUTLER.

V.—OPTIC NEURITIS.

(1) Augiéras.—A contribution to the study of optic neuritis. (Contribution à l'étude des Névrites optiques.) *L'Ophtalmologie Provinciale*, II, p. 13, avril, 1905.

(2) Courtellemont, V. and Galezowski, J.—Papillary stasis, (choked disc) following meningitis.—Recovery. (Stase papillaire postméningitique.—Guérison.) *Recueil d'ophtalmologie*, avril, 1905.

(3) Bichelonne.—On optic neuritis from cold. (De la névrite optique "à frigore.") *Ann. d'oculistique*, T. CXXXV, p. 127, février, 1906.

(4) Guichemerre, P. and Rochon-Duvigneaud.—Unilateral optic neuritis, running a benign course, in a case of cutaneous suppuration consecutive to the sting of an insect. (Névrite optique unilatérale à évolution bénigne, dans un cas de suppuration cutanée consécutive à une piqûre d'insecte.) *La Clinique ophtalmologique*, 25 février, 1906.

(5) de Vaucresson.—Monolateral infective optic neuritis following measles; consecutive papillary atrophy. (Névrite optique infectieuse monolatérale post-rubéolique. Atrophie papillare consécutive.) *Ann d'oculistique*, T. CXXXV, p. 202, mars, 1906.

(6) Levinsohn, Georg.—Experimental contribution to the pathogenesis of choked disc. (Experimenteller Beitrag zur Pathogenese der Stauungspapille.) v. Graefe's *Archiv f. Ophthalmologie*, Bd. 64, 3, 12 Oktober, 1906.

(7) Koenig.—Peripheral optic neuritis.—Surgical treatment. (Névrites optiques périphériques. Essai d'un traitement chirurgical.) *Recueil d'ophtalmologie*, mai, 1907.

(8) **Dupuy-Dutemps.—The central vein of the retina in papillary stasis.** (La veine centrale de la rétine dans la stase papillaire.) *Archives d'ophtalmologie*, novembre, 1907, and *Bull. et Mém. de la Société Française d'ophtalmologie*, Vol. XXIV, 1907, p. 318.

(9) **Morax, V. — Choked disc in the intra-cranial complications of aural infections.** (La névrite œdémateuse dans les complications endo-crâniennes des infections auriculaires.) *Bull. et Mém. de la Société française d'ophtalmologie*, T. XXIV, 1907, p. 244, and *Annales d'oculistique*, mai, 1907.

(10) **Bonte.—On optic neuritis of Pregnancy.** (De la névrite optique gravidique.) *La Clinique Ophtalmologique*, 25 août et 10 septembre, 1907.

(1) **Augiéras** gives the histories of attacks of optic neuritis in three patients which he considers to have been secondary to purulent otitis in the first case, to suppuration following an in-growing toe nail in the second, and to ulceration of the cervix uteri in the third. From them he draws the conclusions that optic neuritis may be caused by a purulent focus near to or far from the brain, and that in such cases the infection may take place by continuity of tissue or through the general circulation, and may manifest itself simultaneously by the occurrence of optic neuritis and by more or less characteristic meningeal symptoms; the ophthalmoscopic appearances may be those of œdematous papillitis or of retrobulbar neuritis. Active mercurial treatment has a favourable influence on the disease, even without removal of its primary source. R. J. COULTER.

(2) **V. Courtellemont and Galezowski** describe the case of a young girl, *æt.* 19 years, who suffered from typical symptoms of cerebrospinal meningitis, *viz.*, stiffness of the neck, intense pain in the spine and head, vomiting, delirium, constipation, and feverishness. On the second day of the disease the vision of the left eye failed her, and later she developed a paralytic convergent strabismus and nystagmus in the same eye. Ophthalmoscopic examination revealed the existence of marked swelling, hyperæmia, and striation of the disc in each eye, with greyish exudation covering some of the vessels in the neighbourhood of the discs. Although the patient was blind in the left eye, and had full visual acuity and field in the right eye, there was no material difference in the ophthalmoscopic appearances of the two eyes. The fundus changes gradually abated, and at the end of two months, the squint had entirely disappeared, and L.V. $= \frac{6}{9}$. Six months later, vision was full, and disc normal in each eye. J. JAMESON EVANS.

(3) **Bichelonne's** patient, a robust, healthy soldier, 24 years of age, after severe exercise on a very hot day, slept

in an open stable on the damp ground, lying on his right side. Next day he noticed a mist in the centre of the field of vision of his right eye, but he did not consult a doctor until three months later, when he was found to have in the right eye: (1) optic neuritis, (2) choroidal *plaque* running inwards from the disc, (3) vision reduced to P.L. Bichelonne quotes similar recorded cases, and discusses the ætiology of the condition, which he considers to be due to exudation or to hæmorrhage into the sheath of the nerve, as a result of exposure to cold.

R. J. COULTER.

(4) **Guichemerre and Rochon-Duvigneaud** describe a very interesting case, in which a medical man in perfect health and with good personal history who was stung by an (unknown) insect on the wrist, developed an abscess locally, and suffered a fortnight afterwards (at the time when the local suppuration was commencing to decline) from vertigo, severe occipital and periorbital pain, obscuration of vision, and diminution of V. of the left eye to 1/20. Ophthalmoscopic examination revealed an optic neuritis with thread-like and over-filled veins. The only treatment prescribed consisted of milk diet, diuretics, purgatives, and the application of leeches. Seven days later, vision began to improve, and the pathological appearances of the fundus to pass away. After two months, the eye had practically recovered, and vision was $\frac{2}{3}$. A slight dyschromatopsia persisted. In their remarks on the case the authors point out that there was really no treatment beyond that employed at the commencement for the relief of pain. They conclude that micro-organisms (undetermined) had formed a little inflammatory focus in the optic nerve, but, as they remark, in the absence of a bacteriological examination, it is impossible to make a correct diagnosis of the initial lesion.

ERNEST THOMSON.

(5) **de Vaucresson** gives the history of monolateral optic neuritis occurring in a soldier, 24 years of age, as a sequel to an attack of measles, the symptoms and course of which were mild, except that it was accompanied by an unusual amount of frontal headache. The patient was recovering, and had begun to get about, when he complained that he had suddenly and almost completely lost the sight of his right eye. On examination, the right optic disc was found to be covered with red spots, like hæmorrhages, and some cutaneous paræsthesia was discovered in the right supraorbital region, while the eye could barely distinguish the light of the lamp held close to it. In less than a week, an intense chorioretinitis had developed, and in seven weeks there was complete white atrophy of the optic nerve. The author directs special attention to the monolateral nature of the affection (the left eye remained perfect throughout) and to the rapidity of its course. He suggests that the infection spread from a meningitis, to the existence of which the severe headache and supraorbital

paræsthesia point, but that this explanation does not exclude the possibility of a direct toxic infection of the nerve.

R. J. COULTER.

(6) **Levinsohn** combines in his experiments ligature of the optic nerve with subarachnoidal injection of cinnabar. He arrives at the following conclusions: (i) The circulation within the vaginal space of the optic nerve is always very sluggish. It comprises a slight current of cerebro-spinal lymph from the brain towards the eye, and also another one from the eye along the axis of the nerve towards the brain. Both meet along the perivascular spaces of the central vessels. (ii) A small subarachnoidal injection of cinnabar fills the vaginal optic space almost at once and penetrates into the perivascular spaces of the central vessels. (iii) Inflammation and hydrops counterbalance each other to some extent, so that in severe inflammation the intervaginal space obliterates instead of extending. (iv) The causation of choked disc is bound up with three conditions, of which two are of primary and the third of secondary origin, *viz.*: the increase of intracranial pressure and the inflammatory change of the cerebro-spinal lymph, and then the obstruction of the perivascular spaces along the central vessels; this, in its turn, interferes with the outflow of the intraocular fluid and leads to symptoms of inflammation. R. GRUBER.

(7) **Koenig** describes peripheral optic neuritis as a neuritis without stasis, with infiltration limited to the papilla, and without any concomitant cerebral symptoms. It is generally unilateral, or the two eyes may be attacked successively. It is independent of any cerebral lesion, and is developed locally and directly. Vision may be seriously affected from the first, and in this respect it differs from œdematous neuritis with stasis, in which there is often a marked disproportion between the intensity of the ophthalmoscopic lesion and the small diminution in visual acuity. Central scotoma and contraction of the visual field are generally present. The author avoids the use of the term retro-bulbar neuritis, which he regards as a syndrome rather than a definite clinical entity.

Peripheral optic neuritis may be due to infectious diseases, such as influenza, malaria, etc.; to toxins, whether of general diseases, gastro-intestinal, or such chemical toxins as tobacco, lead, quinine, or carbon sulphide, alcohol, and arsenic; or it may be due to diathetic diseases, such as gout or rheumatism. The infectious, toxic, or diathetic element may act directly upon the nervous elements, but the author considers that the nerve may be affected through the lymphatic system, or pre-eminently through their action on the vascular supply of the nerve. It is with a view to producing an influence on the vascular supply of the nerve or the posterior part of the globe that the author has instituted his surgical treatment of peripheral neuritis.

The operation consists in making incisions into the sclerotic,

at one or more places, at a distance of 3mm. from the corneal limbus. The conjunctiva may be lifted off first, if desired, and then a deep incision is made into the sclerotic, preferably with Galezowski's sclerotome; the wound is gradually enlarged and the point of the sclerotome pushed forward into the anterior chamber, which is emptied without causing any prolapse of the iris. It is well to make two or four punctures at once, at the extremities of the two principal meridians. This interference with the anterior paths of filtration and excretion influences the circulation at the posterior part of the globe, and around the optic nerve (circle of Haller) through the anastomoses between the anterior ciliary vessels and the circulus major and the posterior ciliary vessels. It must be clearly understood that this operation has no effect in œdematous neuritis with stasis any more than trephining and lumbar punctures have on peripheral neuritis.

Seven cases treated by this surgical method are detailed by the author. The first was distinctly gouty and rheumatic. Both eyes were affected successively. The results were eminently satisfactory, but one eye showed some permanent atrophy of the nerve, owing to delay in adopting operative measures. The second was of indefinite origin, and was promptly relieved by operation after treatment by blistering, pilocarpin, purgation, and mustard baths had failed. The third case followed pleuro-pneumonia, and was cured in about a week by scleral punctures. The fourth case was a diabetic of some years' standing, and in addition to the optic neuritis had some macular hæmorrhages. Scleral punctures removed some of the papillary infiltration, but no improvement of vision resulted. The fifth case is described as a perineuritis associated with gastro-intestinal trouble. Complete recovery followed sclerotomy. The sixth case followed malaria with congestion of the liver and jaundice. Sclerotomy, without opening and emptying of the anterior chamber, was unsuccessful, but sclerotomy and emptying of the chamber, was completely successful. The seventh case is described as retro-bulbar neuritis after influenza. Recovery followed sclerotomy within two days.

Improvement of vision and absorption of the papillary infiltration took place within two to ten days. The operation often has to be repeated, but as it is quite harmless, this is of no particular consequence. J. JAMESON EVANS.

(8) **Dupuy-Dutemps** (Paris) concludes an important pathological paper (illustrated) respecting the condition of the central vein of the retina in cases of "choked disc," with the following words:—"(1) The artery and the central vein in their intra-neural course, including in that the scleral part, are not narrowed; the vein in particular is large, of good calibre, and often stuffed with red blood cells. It retains the same appearance as far as the lower part of the pial sheath.

(2) In the thickness of the pial sheath the central vein is already very flattened, and that irrespective of its course, whether straight, oblique, or spiral. (3) The flattening of the vein attains its maximum in the dilated intervaginal space. There the vessel appears crushed, so that its lumen is reduced to a flattened opening parallel to the walls of the cavity. (4) The vein remains as markedly flattened in the internal part of the dural sheath as in the space, and may even, when examined under a low power of the microscope, sometimes be confused with a lymphatic cleft. Before its exit, in the external part of the dural sheath, it resumes its normal dimensions, and in sections appears as a gaping sinus, full of blood, and of more or less regular contour. (5) The artery, whether alone or accompanied by the vein in its passage through the sheaths, presents no noteworthy deformity. It is sometimes quite normal, and sometimes slightly contracted, but its channel is always permeable." SYDNEY STEPHENSON.

(9) A carefully recorded case of optic neuritis, associated with thrombosis of the lateral sinus, extra-dural abscess, and chronic otorrhœa, together with pathological and bacteriological details, is presented by **Morax** (Paris). The case is as follows :—

A female child, aged 10 years, was admitted to the Lariboisière Hospital on May 19th, 1905, on account of disturbance of sight, accompanied by grave general symptoms. The patient had suffered from left otorrhœa since 1904, and the discharge from the meatus had been fœtid for several months. Four days before admission, vomiting, constipation, violent headache, and failure of sight. Upon admission, V. 5/35 (about), and bilateral optic neuritis. On the following day, slight convergent strabismus, and tenderness over the left mastoid. By lumbar puncture 30 c.cm. of cerebro-spinal fluid were withdrawn. The liquid, which escaped under strong pressure, was limpid, contained few lymphocytes, and was sterile as regards any growth on agar-agar or ascites-agar. The operation was followed by temporary improvement both in the sight and the general condition of the child. On May 25th lumbar puncture repeated. Fluid still limpid, containing lymphocytes and numerous polynuclear cells. No growth of bacteria on nutrient media. Death on June 1st—*i.e.*, twelve days after admission. *Autopsy* : No evidences of meningitis or of tubercles on the meningeal vessels. An extra-dural abscess, the size of a hazel nut, containing grey-green and offensive pus, found at the level of the posterior surface of the mastoid. Left lateral sinus thrombosed. The wall of the sinus stood in communication with the extra-dural abscess. No endocarditis. Pleuritis. Large abscess, with fœtid contents, in upper part of left lung, and several abscesses, the size of a nut, in lower part of right lung. *Bacteriological examination* : Pus from the lateral sinus included B. perfringens, B. ramosus, and Gram-positive fine bacilli, together with a few streptococci. There were also fine, filamentous bacilli, Gram-negative. Cultures from the ear showed B. perfringens, streptococci, and several kinds of anaërobic organisms, not more exactly identified. The cerebro-spinal fluid included no microbe capable of cultivation by the ordinary means, and no organisms were found in smears prepared from it after centrifugalisation. In smears from the pulmonary abscess, bacilli resembling the B. fusiformis were found, as well as some streptococci. Inoculation of three guinea-pigs with particles of the left optic nerve, papilla, and sheaths of the optic nerve, yielded a negative result. *Histological examination* : The parts examined histologically included the thrombosed sinus, the optic nerve, the posterior half of the right eyeball, and the decalcified mastoid process. The sinus presented a different appearance according to the exact spot examined. In the neighbourhood of the jugular dilatation and in the zone corresponding to the extra-dural abscess the walls of the sinus were infiltrated with more or less necrotic polynuclears and filled with a mass of polynuclears and micro-organisms. In the vertical and horizontal parts of the sinus a clot in process of

organization was found, in addition to a microbic mass. The disc was swollen, the central vessels were dilated, and the elements of the optic nerve were dissociated by œdema. Cellular infiltration, however, was conspicuous by its absence. The vaginal space was obviously dilated, and there was slight cellular proliferation of the arachnoid with some lymphocytes. The rest of the optic nerve and the sheaths were normal. The histological study of the mastoid was rendered difficult owing to a fault in *technique*. But no direct communication by osseous destruction existed between the intra-auricular purulent foci, on the one hand, and the venous thrombosis or the extra-dural abscess, on the other.

Chronic suppuration of the middle ear may cause intracranial complications, of which the most common are: 1. extra- or sub-dural abscess: 2. purulent meningitis; 3. cerebral or cerebellar abscess; and 4. thrombo-phlebitis of the venous sinuses. As to the relative frequency of these complications, Morax quotes the following figures from Körner: thrombo-phlebitis, 41 cases; cerebral abscess, 43 cases; and meningitis, 31 cases. It is necessary to bear in mind that infection of the sinus may be complicated by an extra-dural abscess or meningeal infection. Whenever discharge from the ear has a fœtid odour it will inevitably be found to contain anaërobic micro-organisms. Treatment will vary according to the exact condition present, and hence precise diagnosis is of the first importance. Morax enters into an elaborate analysis of the communications of Jansen (1894), Leutert (1896), Hansen (1901), and Körner (1902), more especially as regards the significance and frequency of the associated ophthalmoscopic signs. He concludes that many of the symptoms of the intra-cranial manifestations of otitic infection are caused by an augmentation in the amount of the cerebro-spinal fluid, or, in other words, by internal hydrocephalus. This is shown, during life, by the pressure under which the fluid escapes when evacuated by lumbar puncture, as well as by the improvement in the cerebral symptoms and in sight that often follow the operation. There are three hypotheses on which the hypertension of the liquid has been explained: 1. Toxic œdema connected with the presence of an infective focus; 2. œdema connected with circulatory disturbances; and 3. glandular hypersecretion. Cases are mentioned where recovery occurred, even although œdematous neuritis was present, after suitable surgical treatment had been adopted. The prognosis of the neuritis, therefore, is not necessarily bad. It is important to remember that the discovery of neuritis in a patient affected with chronic otorrhœa does not necessarily prove that the neuritis is due to an intra-cranial complication produced by the ear mischief. It has been known to result from the accidental co-existence of glioma of the cerebellum in one case and of tuberculous meningitis in another (Hansen).

Morax, summing up the whole matter, thus expresses himself: "The œdematous neuritis (*StauungsPapille*) which appears sometimes with or without functional trouble in patients affected with chronic otorrhœa with intra-cranial complications, is not the consequence of an extension of the infection to the meninges.

It possesses the same pathogeny as the œdematous neuritis which accompanies intra-cranial neoplasms or tubercles, and like that is due to an internal hydrocephalus. Its existence does not appear to modify the prognosis, the latter being markedly influenced by opportune and complete surgical intervention."

SYDNEY STEPHENSON.

(10) **Bonte** relates the interesting case of a lady of 38 in her ninth pregnancy who in the latter part of it became blind of both eyes from optic neuritis. (She gave a history of transitory blindness *after* her previous accouchement). The neuritis went on to atrophy, and the patient remained blind. The case was not one of retrobulbar neuritis, of primary atrophy, of uræmic amaurosis, or of albuminuric retinitis. The author does not attribute the neuritis to albuminuria—which existed during pregnancy—but thinks, with Pinard, that all the troubles of pregnancy are consequences of an auto-intoxication, of which albuminuria is one and optic neuritis another.

ERNEST THOMSON.

VI.—OBSTRUCTIVE DISEASE OF THE RETINAL VESSELS.

Reber, Wendell (Philadelphia). — Obstructive disease of the retinal vessels. *Ophthalmology*, January, 1907.

Reber's paper on arterio-sclerosis is not an easy one to abstract, more particularly since the author refrains from stating his own views and conclusions. It combines a summary of the views of others on the subject of the anatomical causes of the clinical pictures known as thrombosis and embolism of the retinal vessels, with illustrative cases of his own. Regarding the clinical ophthalmoscopic picture of arterio-sclerosis, the definitions of Alleman, Gunn, and de Schweinitz are given, and on the anatomico-pathological side Parsons, Reimar, v. Michel, Hertel, and Raehlmann are quoted. The most important point as to gross obstructive disease of the retinal vessels concerns the actual anatomical lesion. Considerable prominence is given to the view that real *embolism* of the central artery does not occur. "When it is borne in mind that the ophthalmic artery leaves the internal carotid at a right angle, and that the branch of the ophthalmic that becomes the central retinal artery is also given off at an approximate right angle; and that, finally, this same central artery, soon after it enters the nerve and, again, just when it leaves the nerve to enter the eye, makes a very sharp bend, it would seem almost impossible that a floating embolus with a tendency to follow the regular blood current should pass off twice from the general blood current finally to gain entrance to

the central artery of the retina." Harms, indeed, states that "a real embolism of the central artery as first described by von Graefe does not exist anatomically." Harms's conclusions, after investigating twelve cases clinically and anatomically, are that obstruction of the central artery may be effected: (1) by thromboses of the previously free lumen without proliferation; (2) by primary affections of the walls—chiefly endarteritis proliferans; (3) by lime concretions.

There is a great deal of interesting matter and there are many fully worked-out clinical cases in this very thoughtful article of 27 pages, but the points should be gathered by reading the original. ERNEST THOMSON.

VIII.—FRACTURE OF THE SKULL AND OF THE OPTIC CANAL.

Laroyenne and Moreau.—Three cases of cranial fracture followed by probable fracture of the optic canal. (Trois cas de fractures du crâne suivies de fractures probables du canal optique.) *Revue générale d'ophtalmologie*, 31 mars, 1907.

Laroyenne and **Moreau** give details of three cases in which fracture of the optic canal was diagnosed from the eye symptoms.

The first patient, aged 20, fell off a swing on to his head. Twenty days later he complained of diminution of sight. The visual fields were concentrically narrowed. Right field in normal order of colours, left field in inverted order. V.A. right, $\frac{1}{10}$, left, $\frac{1}{10}$. Four months later, right disc atrophic (post-neuritic), left disc red and blurred; right field further constricted, left field slightly larger than at first note. V.A. right, $\frac{1}{15}$, left, $\frac{1}{6}$. Right pupil wider than left; consensual reaction not completely abolished. Refraction myopic. Right, 2 D.; left, 2·5 D. *Diagnosis*, fissured fracture of both optic canals.

The second patient was a man of 62 who hit his head against a stone; scalp wound with epistaxis, but no bleeding from ear. V.A. remained normal for nine months. At one year after the accident he was blind with post-neuritic optic atrophy in the left eye. *Probable diagnosis*, fracture of the left optic canal and compression of the nerve.

The third patient, a man of 18, received a revolver ball in the supero-internal angle of the left orbit. As shown by radiograms, the ball had lodged in the corona radiata, and had in its passage torn up the roof of the orbit at its posterior part. On recovering consciousness after the accident, the patient was found to be blind in the left eye. O.E., eight days after the

wound revealed œdema of the disc, tortuous veins, but no obliteration of arteries. There was some exophthalmos and paralysis of the superior rectus. At one month, the left disc was white and fluffy; slight paresis of superior rectus. Right eye normal. *Diagnosis*, splintered fracture of the left optic canal, with tearing of the tendon of the superior rectus.

The authors point out the necessity, from the medico-legal standpoint, of examining the fundus as soon as possible after the accident in all cases where there may be a suspicion of cranial lesion. ERNEST THOMSON.

VIII.—OPERATIONS.

(1) Zimmermann, W.—On protheses for the lacrymal sac. (Ueber Thränensackprothese.) *Die Ophthal. Klinik*, Sept. 20, 1907, p. 545.

(2) Rollet, E.—Operative technique of extirpation of the lacrymal sac with the raspatory. (Technique opératoire de l'extirpation du sac lacrymal à la rugine.) *Revue générale d'Ophtalmologie*, 30 septembre, 1907.

(3) Fernandez.—Some problems of the operation of cataract. (Algunos problemas acerca de la operacion de la catarata.) *Arch. de Oftal.*, Octubre, 1907.

(4) Bonsignorio.—Regarding the flap in cataract operation. (Du lambeau dans l'opération de la cataracte.) *La Clinique Ophtalmologique*, 10 novembre, 1907.

(5) Dransart.—On supplementing the superior oblique by the external rectus, and by the inferior rectus: operative procedures. (De la suppléance du muscle grand oblique par le muscle droit externe et par le muscle droit inférieur, procédés opératoires.) *L'Ophtalmologie Provinciale*, T. IV, p. 113, novembre, 1907.

(6) Koster, W.—Permanent drainage of the lacrymal passages. (Die permanente Drainage der Thranenabflusswege.) v. Graefe's *Archiv f. Ophthalmologie*, November, 1907.

(7) Stolting.—Iridectomy or sclerotomy in hydrophthalmia? (Ist bei Hydropthalmus die Iridektomie oder die Sclerotomie als Normal-Operation angesehen?) v. Graefe's *Archiv f. Ophthalmologie*, November, 1907.

(8) Roper, Arthur C.—Twenty-six cases in which both eyes were operated on for senile cataract. *Lancet*, 14th December, 1907.

9) Zimmermann.—Further notes upon lacrymal protheses. (Weitere Mitteilungen ueber die Einheilung einer Thränensackprothese.) *Die Ophth. Klinik*, Dezember 20th, 1907, p. 737.

(10) Gidney, Capt. H.—Sixty-one eye operations in one day. *Indian Medical Gazette*, December, 1907.

(11) Hesse, Robert.—On the technique of tattooing of the cornea. (Zur Technik der Tätowierung der Hornhaut.) *Klin. Monatsbl. f. Augenheilkunde*, Dezember, 1907.

(12) le Roux, H.—On a case of collapse of the sclera during a cataract operation. (Sur un cas de collapsus de la sclérotique dans une opération de cataracte.) *La Clinique ophtalmologique*, 10 janvier, 1908.

(13) Lefebvre, G. — Exenteration by the cautery and panophthalmitis. (Exentération ignée et panophtalmie.) *Archives d'ophtalmologie*, janvier, 1908.

(14) Kuhnt, H.—On Zonulotomy. (Ueber die Zonulotomie.) *Zeitschrift f. Augenheilkunde*, Januar, 1908.

(15) Krauss, W.—A contribution to the couching question. (Zur Frage der Reklination.) *Zeitschrift f. Augenheilkunde*, Januar, 1908.

(16) Elliot, R. H., Major I.M.S. — Some notes and observations on 310 consecutive operations for extirpation of the lacrymal sac. *Ind. Med. Gazette*, XLIII, pp. 56 and 94, Feb., and March, 1908, and *Ophthalmic Review*, February, 1908.

(1) **Zimmermann** advocates the insertion of silver tubes to prevent the troublesome lacrymation sometimes following excision of the lacrymal sac. He has adopted this plan with success in a number of cases. To obtain good results, he believes it essential to follow his mode of removing the lacrymal sac, which differs in some respects from the usual procedure. The method is the following one: the incision through the skin is begun 3—5 mm. above the crista and is carried straight down to the bone. Then, the periosteum is detached from above downwards with Lesshaft's raspatory until the lacrymal fossa is reached. The assistant now draws the sac, with the parts attached to it, to the nasal side, and the surgeon dissects off the skin from the sac. The latter is then excised, the silver tube inserted in its place, the wound closed, and a pressure bandage put on. PERCIVAL J. HAY.

(2) This is an account by **Rollet** of his operation as performed at Oxford Eye Hospital on July 27th last during the Oxford Ophthalmological Congress so successfully instituted by

R. W. Doyne. As the description is practically identical with that given in full by Rollet in THE OPHTHALMOSCOPE for December, 1903, it is hardly necessary to repeat it here. E. T.

(3) The problems which **Fernandez** discusses are largely ethical. He decides that the surgeon is not justified in operating on the second eye of an aged person who has been successfully operated on already in one eye. The risk of sympathetic inflammation is too real to allow the second operation to be undertaken light-heartedly. In children, however, when one eye only is cataractous, it should be dealt with, because delay may be followed by amblyopia. Fernandez would avoid all operations for artificial maturation, although he confesses that under exceptional circumstances these are admissible.

HAROLD GRIMSDALE.

(4) This article is mainly a history of the different kinds of flaps made by different operators, with some remarks by **Bonsignorio** on the extraction of cataract. ERNEST THOMSON.

(5) **Dransart**, having to deal with a case of traumatic separation of the superior oblique muscle from its origin in the orbit, sutured the remains of the muscle to the upper border of the tendon of the external rectus, with the result that the movements of the eye appeared to be good, but tests for diplopia could not be carried out as it was blinded by the accident. He suggests that in cases of paralysis of the superior oblique the muscle should be detached from its origin and sutured to the external, or preferably, to the inferior rectus, and describes the methods by which he would advise such operations to be performed. R. J. COULTER.

(6) **Koster's** treatment is very similar to the method of Burdon Cooper (*Ophthalmic Review*, January, 1907), both authors arriving at their conclusions independently. Koster proceeds differently from B. Cooper in introducing the silk thread; he uses for this purpose de Wecker's hollow canula, the mandril in which is, after introduction, exchanged for a loop of very thin copper wire. This is caught in the nose by means of a small hook (the nasal speculum of Hartmann-Killian and a reflector is used in this proceeding, which is far from easy). The copper wire is now drawn forward, threaded with a silk thread and pulled out through the canaliculus, when the silk thread is tied into a firm knot. This thread has to be worn for a different but always lengthened period, about four weeks or more. During this time active treatment proceeds. The thread must be kept scrupulously clean, and various solutions, mostly silver nitrate, applied to the lacrymal passages by means of soaking the thread in them, or rubbing them well in, and then making the thread slide along, a proceeding which the patient may well perform himself. The disfigurement is, of course, very real, but most patients seem to take it rather philosophically, and Koster's results are certainly encouraging. R. GRUBER.

(7) **Stolting** is in favour of sclerotomy, which, however, must be performed as early as possible. Failures are, of course, not infrequent, but it remains doubtful whether iridectomy is more effective, and it is certainly less safe, especially in eyes with considerable thinning of the scleral capsule. But sclerotomy must be frequently repeated (up to four and five times), and should be performed even in cases of very old standing where there is little hope of improving the sight, in order to remove the pain, which is often very severe, and due to increased tension. Great attention must be given to the after-treatment. For the first or second dressing, infants should be anæsthetised.

R. GRUBER.

(8) **Roper's** results were:—similar result in both eyes, 53·84 per cent. Better result in second eye, 15·38 per cent. Worse result in second eye, 27·23 per cent. No record of second eye, 3·84 per cent. E.T.

(9) **Zimmermann** communicates the results of seven more operations for removal of the lacrymal sac, followed by insertion of the author's prothesis. In all the cases so far there has been no lacrymation after the operation, and the prothesis has not shown any tendency to work its way out. In one case enlargement of the inferior turbinate prevented the escape of the lacrymal secretion into the nose, and the prothesis became displaced upwards and had to be removed. The prothesis can be obtained from the Medizinischer Warenhaus, Berlin, which keeps it in four sizes. PERCIVAL J. HAY.

(10) In an interesting article, **Capt. Gidney** describes the conditions of eye-work in outlying Indian districts, and discusses the bearing of the surroundings upon some of the details of cataract extraction. Fifty-eight of the sixty-one operations were cataract extractions.

The patients are collected from the surrounding district, and the civil surgeon arrives at the dispensary prepared to select his cases at once and to begin operating. He does not see the eyes again for a considerable time, if ever, the after-treatment being carried out by a native hospital assistant. The patients are carried or led away a few hours after operation, and many of them have to drive or walk to the dispensary daily for the after-treatment.

Gidney washes out and swabs the conjunctiva with 1 in 3,000 perchloride lotion. He considers the use of a conjunctival flap essential in district work, and therefore does not extract the lens in its capsule. Where the patient can be kept absolutely quiet for some days after operation, he prefers the intra-capsular method. But with this method a conjunctival flap has the disadvantage of being liable to cause a hæmorrhage into the anterior chamber which cannot be washed out, intraocular irrigation being here contra-indicated. In any case irrigation for blood and cortex is inadmissible in district work, as there are no

trustworthy attendants to prepare the solution and apparatus. Gidney also lays stress upon the danger of washing conjunctival organisms into the eye, and relates two cases of panophthalmitis almost certainly due to irrigation. In this particular day's work no infections occurred. All the eyes were doing well except one, in which there had been profuse hæmorrhage into the anterior chamber, and in which the final result might still be good.

Gidney speaks of the harm done to the ignorant villagers by the travelling quacks who practise couching, and suggests that Government should be addressed upon the matter. In this proposal the editor of the *Indian Medical Gazette* supports him.

H. HERBERT.

(11) **Hesse**, following the example of Fröhlich, uses v. Hippel's trephine in the operation of tattooing. A circular incision is made in the cornea, and a flap of 1/2 mm. thickness dissected out. The flap, however, is not removed completely, but left in contact at one point of its circumference and merely turned over. A thick solution of Indian ink is then rubbed into the artificial ulcer, whereupon the corneal flap is replaced. The operation, performed on three blind eyes, yielded very good results. C. MARKUS.

(12) **le Roux** reports a remarkable and rare event in the ordinary cataract operation. After making the section and the iridectomy, and when scratching the capsule, the cornea became depressed and folded and a bubble of air entered the anterior chamber; then, *without any loss of vitreous*, the whole globe became soft, the sclera collapsed and became folded, just as if the entire ocular contents had been expelled. The cataract, a soft one, in a man of 32, was removed with the spoon and a binocular dressing applied, which was not removed until the third day. When examined, the eye was found to be in good condition: the cornea and sclera were normal. There was no prolapse of iris; the tension was normal. The eye did well (exact vision not stated), and the patient returned to work in six weeks. le Roux has been able to find only two similar cases recorded—by Chodin at the St. Petersburg Congress in 1903. One of Chodin's cases did well; in the other, the eye was lost through panophthalmitis. Chodin considered the scleral collapse to be due to congenital want of elasticity; le Roux believes that the pathogenesis is still to seek. ERNEST THOMSON.

(13) **Lefebvre** (Calais) traces briefly the evolution of de Lapersonne's operation of *exentération ignée*, quotes figures as to the frequency of fatal meningitis when a suppurating eyeball is removed in the usual way, and relates a couple of cases where enucleation was replaced by de Lapersonne's procedure. Lefebvre claims that so far no death from meningitis has followed the operation, although incidentally he mentions the case of a patient, suffering from

panophthalmitis, who succumbed the day after it had been performed. At the autopsy on this patient, however, pus was found in all the internal organs, so that the panophthalmitis was nothing more than an epiphenomenon, and, for that matter, there were no symptoms of meningitis. The operation is simplicity itself.—After a crucial incision has been made through the cornea, the crystalline lens and most of the purulent contents of the globe are scooped out, and the inner aspect of the eviscerated eyeball, including the papillary region, is seared with the thermo-cautery. The cavity is then irrigated with mercury biniodide or cyanide, drained by means of a bit of gauze, and dressed with a moist pad. As a rule, the temperature falls forthwith, and the agonies of panophthalmitis diminish and disappear. It is suggested that the radiant heat of the cautery is capable of destroying pathogenic organisms, even although the latter are lodged at some distance from the affected eyeball. Lefebvre has witnessed the disappearance of abscesses of the orbit as the result of exenteration of the eyeball by the thermo-cautery, without the necessity of other intervention.

SYDNEY STEPHENSON.

(14) The hyaloid membrane at the ora serrata splits into two layers, one of which must be regarded as the hyaloid membrane proper, being that which is demonstrable over the anterior surface of the vitreous humour. The outer layer adheres to the pars ciliaris retinæ so closely that when removed it generally shows some of the pigmented retinal cells adhering to its outer surface. It forms a fibrous structure much firmer in consistence than the true hyaloid, and extends over the ciliary body to be attached to the lens capsule as the suspensory ligament. That portion which lines the back of the ciliary processes is known as the zonule of Zinn. The suspensory ligament consists of an anterior and posterior part. The posterior, the hyaloid proper, is thin and delicate, and is microscopically structureless. The anterior portion, the *zonula*, contains radiating meridional fibres, stiff in appearance but elastic; they commence opposite the ora serrata and are here firmly adherent to the pars ciliaris retinæ. Other fibres are firmly attached to the lens margin, extending for a short distance over its anterior and posterior surfaces.

Zonulotomy, as devised by **Kuhnt** (Bonn), is an operation to divide the zonula, the anterior portion of the suspensory ligament, in a portion of its circumference. The posterior layer of the ligament should not be touched, that is to say the knife should, if possible, not enter the vitreous.

The space between the ciliary processes and the lens margin is narrow, and neither must be wounded. For this reason the eye must be exceptionally well illuminated; Kuhnt recommends for this purpose such an apparatus as was described in the *Zeitschrift* (Band 2) some years ago.

Unless the pupil can be dilated to its maximal degree, a preliminary iridectomy is necessary. When the iridectomy wound has completely healed Kuhnt performs zonulotomy as follows :—

His own small discission knife is introduced subconjunctivally into the anterior chamber. It is passed into the coloboma, the cutting edge directed to the angle of the anterior chamber, and the zonula divided as freely as can be done without risk. Under such conditions the section is not extensive. Great care must be taken to avoid wounding the equator of the lens. A week later the operation is repeated from the other side of the coloboma. Kuhnt does not say at what distance from the corneoscleral margin the puncture is to be made, nor the exact spot with reference to the coloboma, whether to one side of it or directly above it.

Zonulotomy is especially indicated in those conditions where the lens is to be loosened from a normal suspensory ligament with as little disturbance to the ciliary processes as possible. The operation is only a partial one, but this partial loosening is, however, sufficient, for when once the closed ring is broken the further separation can be achieved by appropriate manipulation without injury to the ciliary body or the vitreous.

As an independent operation, zonulotomy is appropriate for that class of case in which, in consequence of perforating wounds of the ciliary region and subsequent irido-cyclitis, tough membranes have formed which cause localised tension of the suspensory ligament and dragging on the ciliary body. Such a condition gives rise to chronic irritation.

Zonulotomy is a useful adjunct to reclination of the lens whether a senile or a rudimentary infantile cataract be in question, but pre-eminently to the extraction of shrunken membranous, or capsular cataracts, and of tough after-cataracts.

Depression of the lens for exceptional cases has been recently advocated by many ophthalmologists, among them Axenfeld. These surgeons consider that for those patients where the first operation has failed on account of expulsive hæmorrhage, couching offers the best chance for the second eye. Many surgeons also recommend it for insane persons, epileptics, hæmophylics and others, and for cases suffering from incurable trachoma because of the great danger of infection (1). Kuhnt thinks that expulsive hæmorrhage must be regarded as an indication for reclination, but it by no means follows that the blood vessels are equally diseased in both eyes. The other exceptional conditions are better met by subconjunctival extraction.

(1) Our own experience has been that trachoma is not *per se* a cause of infection. We have operated upon many trachomatous eyes, and infection never followed. On the other hand, we have seen many trachoma cases blind after reclination (native couching).

According to Arlt, shrunken infantile cataracts (cataract arido siliquatæ) are best treated by reclination. Kuhnt performs a zonulotomy, and then reclines by the Scarpa-Himly method.

The author thinks that the bad results of couching in the past were due to extensive tearing and stretching of the ciliary body during rupture of the zonule, and to the chemical and traumatic irritation of the dislocated and much lacerated lens. He intends, if he is faced with a case in the future in which, after careful consideration of the *pros* and *cons*, reclination rather than extraction is indicated, to perform a preliminary iridectomy followed by a zonulotomy, which will be as extensive as possible. Reclination will then be performed by Scleronyxis (Scarpa-Himley's method). The needle is introduced in or somewhat under the horizontal meridian, 3-4 m.m. behind the corneo-scleral margin; it is passed behind the lens to its upper border, and over it into the posterior chamber; it is then placed against the anterior capsule at the junction of the upper and middle thirds, and the lens is pressed downwards and outwards by raising the handle of the needle towards the root of the nose.

Zonulotomy is also a useful preliminary to pulling out membranous cataracts and old tough after-cataracts. A curved double-edged discission knife is introduced subconjunctivally into the anterior chamber to the upper limit of the cataract, which is now incised right and left to the horizontal meridian, a hemi-circumference being divided if possible. The eye is immobilised by the tendon of the rectus inferior (Angelucci's method). The speculum is now removed for 5 minutes. Then with the keratome a 4-5 m.m. incision is made in the limbus, and the capsule pulled out with a sharp hook. If the lower half of the cataract does not easily follow, Kuhnt cuts off as much as has been removed. T. HARRISON BUTLER.

(15) **Krauss** (Marburg) gives an account of an unsuccessful case of couching. At the Congress of the German Ophthalmological Society at Heidelburg, Axenfeld raised the reclination question. His procedure he called "sclero-corneal cataract pricking" or "scleronyxis anterior." He recommended this operation in preference to the older methods of scleronyxis posterior and keratonyxis. The method is the following.—After a small preparatory iridectomy, a curved discission needle is introduced peripherally at the corneo-scleral margin. It is placed on the upper edge of the lens and the organ depressed directly downwards. Axenfeld thought that when the extraction of one lens had been accompanied by expulsive hæmorrhage, or by loss of vitreous, and a similar complication was feared for the other eye, it was wiser to couch than to extract the second lens. Krauss recollected that a similar operation had been performed at Marburg many years before, and gives the full notes in his paper. The patient was a myope, age 53. Both eyes had been frequently inflamed, and

there had been a corneal ulcer on the left side. There was blepharitis and chronic conjunctivitis on both sides. *Right :*—Catar. brunescens, pupil reflex and projection prompt. V.=fingers at 1-2 m. T.n. Fundus not seen. *Left :*—Leucoma adherens in lower and outer quadrant ; central nebula. Catar. calcarea tremulans. T.n. Pupil reaction prompt, projection uncertain on nasal side. V.=hand movements at from 0·5 to 1 m.

A preparatory iridectomy was done on the right side ; this was followed by hyphæma, but the operation caused no inflammatory reaction. Eighteen days later, extraction was attempted, but so much fluid vitreous escaped, that the operation was abandoned. Patient discharged ; no injection ; T. and projection good. Five months later, the lens was depressed. No reaction. V. c. + 6 = 6/60. The lens could be seen moving up and down in the vitreous, which was full of fine opacities. Later on, the left lens was extracted with Weber's vectis after preparatory iridectomy. V.R. c. $\frac{+\ 8}{+\ 4}$ cyl. axis. hor. = 6/12.

V.L. c. + 6 = fingers at 2 m.

Three years later, the patient appeared with vision in both eyes reduced to finger counting. There was a severe chronic irido-cyclitis and a blocked pupil of the couched eye, and this eventually resulted in a shrunken globe.

Krauss discusses the case. He does not think that there is any choice between the various methods of couching ; the final result is the same in all. The lens is more generally reclined than depressed, whatever be the intention of the operator.

T. Harrison Butler.

(16) The 310 operations were performed upon 235 patients in 3 years and 5 months, ending in October, 1907. **Elliot** points out that the indications for excision of the sac are so numerous that it is simpler to mention the cases in which the treatment is unsuitable. "Given an early simple case (of lacrymal obstruction or dacryo-cystitis), in a man of means and leisure, we may adopt conservative treatment, always with the proviso, that failing success we fall back on extirpation of the sac."

He operates under chloroform, and places the incision below the internal palpebral ligament, leaving the ligament undivided. He cuts down on the anterior lip of the lacrymal groove, and makes a crescentic incision varying from 15 to 27 mm. long, averaging 20 mm. He divides the fascia covering the sac with the sharp elevator used for separating the inner and posterior walls of the sac, and isolates the rest of the sac by the use of forceps and scissors. Hæmorrhage is dealt with by pressure and adrenalin chloride solution. Any troublesome bleeding point is touched with a cautery. A spindle-shaped cautery is passed down the nasal duct to destroy its mucous membrane.

Where there is acute lacrymal abscess this is incised and curetted, and swabbed with 1% perchloride of mercury solution, and excision of the sac is deferred for a month. Difficulty is experienced where there is much matting together of the surrounding parts from past phlegmonous inflammation, especially where there is an old-standing fistula, also where there is a shrivelled contracted sac tightly adherent to its surroundings. (The sac was quite free from adhesions in only 13 out of the last 150 cases). After separating the sac from the bed of the groove with the elevator, the sac is boldly cut away by scissors, together with some of the surrounding tissue, taking as little of the latter as possible. In 28·9% of the cases the sac was removed in pieces. The cavity left was dried and inspected, and the sac examined under water and slit open. Where there was any doubt of the completeness of the removal, the neighbourhood of the dome of the wound was cauterized freely. This was done in nearly half of the operations. In only one case, the fourth of the series, was it found necessary to operate a second time on account of some of the sac wall having been left behind.

The average time taken in the operation was 12 minutes; in the last 150 operations it was only 9.5 minutes. The longest period was 50 minutes, the shortest 4·5 minutes. Except where there was a septic ulcer of the cornea present requiring treatment, the dressing was not changed till the seventh day, when the sutures were removed. Septic corneal ulcer was present in 14·52 per cent. of the cases. In two cases, though the ulcer healed apparently, it broke out again later, and led to panophthalmitis. Another case of panophthalmitis occurred where the ulcer did not heal.

In the last 150 operations healing of the wound occurred by first intention in 146 instances. The adjacent bone was carious in 4·66 per cent. of the cases (!)

From the finding of lymph follicles by Mr. Coats, of Moorfields, in some of the sac removed, it seems probable that trachoma played a part in the causation of the dacryocystitis for which the treatment was undertaken. H. HERBERT.

REVIEWS.

Text-Book of Ophthalmology. By Dr. ERNST FUCHS, Professor of Ophthalmology in the University of Vienna. Authorized translation from the eleventh revised and greatly enlarged German edition with numerous additions by Alexander Duane, M.D., Surgeon Ophthalmic and Aural Institute, New York. With 441 illustrations in colours and black and white. 877 pages. J. B. Lippincott Company, 5, Henrietta Street, Covent Garden, London. 1908. Cloth, 25/- net.

The third English edition of Professor Fuch's famous *Text-Book of Ophthalmology* has recently been issued by the J. B. Lippincott Company, of London and Philadelphia. It represents the authorized translation from the eleventh German edition, with numerous additions, chiefly dealing with functional examination, motor anomalies, and refraction, by the translator, Dr. Alexander Duane, of New York. No better summary of the present state of ophthalmological science could possibly be found than is represented by Fuch's *Text-Book*. Its judicious tone, its excellent arrangement, and its clear writing combine to place it in the very front rank of special manuals. It cannot be praised too highly. The revision of the present edition has been ably and thoroughly done. The most marked changes are to be found in the sections which deal with diseases of the cornea, the pathology of irido-cyclitis, sympathetic ophthalmitis, glaucoma, diseases of the optic nerve, disorders of motility, affections of the orbit, and refraction. Other important additions are represented by sections on diseases of the nasal accessory sinuses; Hering's theory of space perception; and the question of compensation for injuries to the eyes. The volume now appears for the first time in its history with coloured plates, representing various conditions, healthy and diseased, of the fundus oculi. Although doubtless adequate for their purpose, still these can scarcely be considered as works of art. On the other hand, most of the numerous text-illustrations are good, and some are really excellent.

Manual of Ophthalmic Operations. By F. P. MAYNARD, M.B. D.P.H., F.R.C.S., Lieut.-Col., Indian Medical Service, Professor of Ophthalmic Surgery, Medical College, Calcutta, etc., etc. Calcutta: Thacker, Spink, & Co., 1908. (W. Thacker & Co., 2, Creed Lane, London.) Price, 9s. net.

The scope of this volume is fairly well indicated by its bulk; the whole subject is comprised in 223 pages. Compared with Czermak's monumental work this attempt is very modest. It is obviously not intended to be in any sense a work of reference for ophthalmic surgeons. Yet the large experience of the author, in one of the chief operative centres in India, entitles this small volume to consideration. The practice and opinions of so experienced an operator must be of interest to eye surgeons generally. But the volume is written primarily for the general surgeon. Throughout India, in the most out-of-the-way places, civil surgeons and native practitioners and assistant surgeons are constantly called upon to undertake much operative ophthalmic work. And this practical exposition must appeal directly to them.

The beginner is not bewildered by a large array of operative measures. The selection of the suitable procedure is, to a large extent, made for him, and the selected methods are described in a simple and straightforward manner.

In the general preparatory arrangements the simplicity characteristic of eye work in India is noticeable. "Surgical millinery" is avoided, and the preventive measures against infection of the wound are concentrated upon the recognised sources of infective organisms. In India the work is done practically in the open air, and perhaps this explains much of the success attained under seemingly unfavourable conditions. Among small matters of detail it may be noticed that Maynard is satisfied with sterilization of his Graefe's knives by simple washing in absolute alcohol. He irrigates the conjunctival sac with 1 in 5,000 mercuric iodide solution before operation. Exception may be taken to the implied statement that all mercuria lotions are liable to make the cornea permanently hazy, even when they do not gain access to the anterior chamber (p. 20).

Maynard considers local anæsthesia obtained with the help of adrenalin solution unsuited for iridectomy in acute glaucoma, but states that the application of cocain in crystal to the line of the incision may suffice in patients of good nerve. Lagrange's and Herbert's operations for glaucoma are described. The description of the latter is the only detailed account that has yet been published.

In cataract extraction Maynard operates mostly with iridectomy. The incision is made just anterior to the limbus, but a conjunctival flap is obtained by turning the edge of the knife backward in completing the corneal section. He prefers the cystitome to capsule forceps for opening the capsule. Irrigation of the anterior chamber with McKeown's apparatus is utilized for the removal of cortex, whenever expression fails to give a black pupil. Maynard is peculiar in instilling atropin after operation, with a view of thereby preventing prolapse of iris.

His opinion upon intracapsular extraction is valuable, for he gave the method a fair trial as a routine operation for the general run of cataracts, and he has seen Smith operate at Jullundur. He supports Smith only in so far that he considers the operation suitable for unripe cataracts, at least in India, as well as for over-ripe cataracts. But it is a little difficult to see why the intracapsular operation should be distinguished as "expression," while the ordinary operation — which is also usually an expression —is called "extraction." Czermak's subconjunctival extraction is the only other method selected for description.

In the treatment of trachoma both "simple" and "combined" excision are described. In blepharoplasty Thiersch's method of skin-grafting is considered sufficient. Then follows a description of extirpation of the lacrymal sac and of the use of magnets in eye surgery. For enucleation of the globe local anæsthesia by Barker's solution is advised for non-inflammatory cases in adults. Among advancement operations, Worth's method is alone described.

The book is well produced, and printer's errors are not numerous. It is freely illustrated. The illustrations, which are original, are mostly from photographs, including five pairs of stereoscopic plates. Some of them might perhaps have been more clearly outlined with advantage. H. HERBERT.

Aids to Ophthalmology. By N. BISHOP HARMAN, M.A., M.B.Cantab., F.R.C.S.Eng. London: Baillière, Tindal, and Cox. 1908. pp. 165, 70 illustrations. Price: 2s. 6d cloth, 2s. paper cover, net.*

The plan and general details of this book are probably as good as can be expected in a work of such small size. To compress ophthalmology into 165 small pages is somewhat of a feat, and the book suffers from the usual result of great compression, namely, dogmatic and sometimes insufficient statement. Whether for his good or not, this is what the average student seems to like. With the statements made and with the advice given it is not always possible to agree, and yet one must admit that, on the whole, Mr. Harman justifies the hope expressed in the preface, "that no point essential to the knowledge of the ordinary ophthalmic diseases and injuries has escaped notice." It may be a help to the author in preparing the next edition if we suggest that the single "erratum" mentioned on a pasted-in slip ought to be multiplied by eight at least, and that we do not exactly see how a patient can lie "prone on his back." E. T.

Traitement des Plaies de Œil. Rapport presenté le 4 mai, 1908, à la Société Française d'Ophtalmologie: Congrès de 1908. **The Treatment of Wounds of the Eye.** By Dr. A. TERSON, of Paris. Paris: G. Steinheil. 1908. P. 111.

This treatise is a report presented to the French Ophthalmological Society, on May 4th last, and the plan adopted is, in the first instance, to describe the topical treatment of wounds of the eye, proceeding to the surgical treatment by suture, conjunctival autoplastic operations, and palpebral occlusion, and followed, in succession, by chapters on the treatment of cases of hernia of the internal coats; of cases complicated with injury of the lens, or by the presence of a foreign body; the treatment of ruptures of the globe; of complex wounds, where other parts are affected, as in gunshot wounds, motor accidents, or the kick of a horse; the question of immediate removal or of making an attempt to preserve the eye, the treatment of acute panophthalmitis, and the proceedings to be adopted in cases of sympathetic ophthalmitis. It will be seen that the various aspects of the subject, although their consideration is limited to a little more than a hundred pages, are considered from many points of

* The former three editions of this little book were the work of Jonathan Hutchinson, junior. Mr. Harman's edition is the fourth.—E.T.

view. As it is a report, it represents the proceedings in general use at the present time, and Dr. Terson's own practice can only be gathered from incidental remarks, or from his approval or disapproval of certain lines of treatment.

Noticing these sections in the order given, we find under the head of topical treatment the measures in common use, such as the thorough cleansing of the wound with physiological solution of common salt, instillation of cocaine with a light, dry bandage over both eyes, or irrigation with solution of the sublimate or cyanide of mercury of the strength of 1 to 5,000 or 1 to 10,000; or, still better, the occasional instillation of argyrol, 1 : 10, which causes no irritation. Bites or stings of venomous insects, of rabid dogs, or cases where tetanus is to be apprehended should be treated with stronger solutions of the mercurial salts, or with iodoform, enesol, argyrol, protargol, collargol, and aniline dyes, all of which may at times prove serviceable, either in solution or ointment. Dr. Terson has employed but has not found asbestos, which can be rendered aseptic by passing it through flame, an ideal dressing. He thinks it is not in any way superior to aseptic gauze. He recommends the moderate use of iced compresses, of leeches, and even of venesection.

For infected wounds Dr. Terson relies upon solutions of the salts of mercury and of silver, as the cyanide or chloride, or the salicylarseniate (enesol) biniodide, or benzoate of the former, or one of the many preparations of silver. Serum-therapy he regards as an important adjuvant. Teulières, of Bordeaux, who has written a work containing a full account of the history of this mode of treatment, agrees with Dr. A. Darier that whatever may be the nature of the infection, the anti-diphtheritic serum is that which is most worthy of confidence. If the ulcer formed after a wound prove refractory, many remedies may be employed—as sulphate of zinc, 1·5, chloride of lime, carbolic acid, tincture of iodine, iodized and oxygenated water, and many others, including the bile of the rabbit. The judicious application of the thermo-cautery has been found to be effective in some cases. Then, again, partial peritomy, *raclage*, *frottage*, *curettage*, prolonged irrigation or *curettage hydraulique*, have been tried and have proved successful, provided the anterior chamber has not been opened.

The surgical occlusion of wounds of the eye as a means of protection against secondary infection, sympathetic ophthalmitis, and vicious cicatrices, may be accomplished by bringing together and suturing the lips of the wound at the time of the injury, or by covering it with a conjunctival flap, or by enclosing it in a palpebral sac, or by maintaining closure of the lids. The sutures used should be sterilized reindeer tendon.

In regard to prolapse of the iris as the result of penetrating wounds, some, as de Wecker, left them, even when large, severely alone. They are dangerous. If seen immediately, an

attempt may be made to reduce the hernia, but it is not often successful, and all delay increases the risk of sympathetic ophthalmitis supervening, As a rule, iridectomy should be performed, taking care that the corners of the wound are carefully cleared of the iris. In old cases he recommends that the cornea should be covered with vaseline oil, and the protrusion be freely touched with a stick of silver nitrate, solution of common salt being afterwards applied.

Of wounds of the eye, complicated by the presence of a foreign body, nothing new is advanced. The importance of radiography is dwelt upon.

Dr. Terson is unable to throw much light upon the difficult subject of sympathetic ophthalmitis. He, with Panas and others, believes that it is now of less frequent occurrence than formerly, but points out that this may be attributable to the aseptic treatment which is so generally adopted in the first instance, and which may be regarded as favouring the view of the microbic origin of the affection. It must not be forgotten that various operations may at one time have conduced to its greater frequency, such as couching and depression and Græfe's linear operation for cataract which inflicted a wound in a dangerous region, and, perhaps also the frequent practice of enucleation formerly performed with the view of removing all chance of sympathetic ophthalmitis, a proceeding that may have led to the belief that the disease was of commoner occurrence than larger experience has shown it to be. The tendency to sympathetic ophthalmitis appears from Schirmer's observations to be always effected through the intermediation of an attack of irido-cyclitis in the exciting eye, although this may be, and often is, overlooked. Dr. Terson asks whether a solution of continuity of the tunica of the eye is a necessary antecedent of sympathetic ophthalmia. That a wound, even if quite superficial, aids the surpervention of an attack is certain, especially if it remains for a long time open, which is a point favourable to the early use of sutures. The microbe of sympathetic ophthalmitis remains to be discovered. It has not yet been demonstrated within the globe, but the observations of zur Nedden seem to prove the existence of certain microbes in the blood. The question of this presence of cytotoxins has been studied by Golovine and Santucci.

Lumbar puncture may hereafter supply useful information, especially if with pure papillitis such complications as occurred in cases recorded by de Wecker and Rogman, in which cephalalgia, pseudo-meningitis, fever, convulsions, feebleness of the lower limbs, rapid and permanent deafness, and signs of toxæmia, were present. The results of zur Nedden's experiments with the serum of a subject affected with sympathetic ophthalmia should be taken into serious consideration as a therapeutic medium; cases having been recorded in which the removal of the exciting eye was followed on the morning after

the injection of serum taken from a patient suffering from the same disease by striking amelioration.

In cases of ruptures of the globe, if subconjunctival, they should remain untouched ; if not, and they gape, are stellate, or present radiations, sutures should be inserted, and a conjunctival flap may be made to cover them. Unexpectedly good results are sometimes obtained, but in a large proportion of cases the results are not commensurate with the pains bestowed upon them, and if the operation is badly executed, there is greater danger than if left alone with a merely aseptic dressing.

In regard to complex or combined wounds of the eye—such, for example, as gunshot wounds—the ordinary rules of surgery apply.

The important subject of the determination of the preservation or the removal of an injured eye is treated at some length by Dr. Terson. He quotes with approval the views expressed by Antonelli in the *Transactions of the French Ophthalmological Society* to the effect that all irregular wounds situated in a dangerous region, the edges of which are difficult to place or to keep in position, call for the removal or the globe, whilst simple cuts or ruptures of the sclerotic or cornea demand conservative surgery. Dr. Terson only adopts evisceration in cases of panophthalmitis with suppuration ; enucleation has been often attended by fatal results.

In his remarks on wounds complicated with rapid panophthalmitis infection Dr. Terson recommends the application of hot linseed meal poultices, and dionine both internally and subcutaneously, and venous stasis effected by cervical compression prolonged for twelve hours by means of elastic bands. The introduction into the vitreous of needles rendered white hot by a current of electricity which prevents that "detestable crucial incision" and, finally, complete evisceration with subsequent application of the thermo-cautery and the introduction into the cavity of a paste of dionine and iodoform ; and even when sympathetic ophthalmitis is fairly established, enucleation with removal of a long piece of the optic nerve should be resorted to, and should be practised at an early period. The shortest period for the establishment of sympathetic ophthalmia, or the period of incubation, is three weeks, the longest period is indefinite. Eyes that have suffered from suppuration or are affected with glaucoma absolutum are extremely unlikely to induce sympathetic ophthalmitis. HENRY POWER.

A Study of the Ocular Manifestations of Systemic Gonorrhœa with reports of cases of this nature. By W. GORDON M. BYERS, M.D., assistant oculist, Royal Victoria Hospital, and Lecturer in Ophthalmology McGill University. Studies from the Royal Victoria Hospital, Montreal, Vol. II, No. 2, February, 1908. The Herald Presses, Montreal. Price not stated.

Dr. Byers's important monograph, dedicated to the memory of the late Frank Buller, deals in an exhaustive way with such affections of the eye and its appendages as are believed to be connected with systemic gonorrhœa. It is far more than a mere conscientious compilation.

In the course of a sketch of the history of the subject, the author traces to St. Yves, who wrote in the year 1722, the belief that certain forms of eye disease were the outcome of metastasis from gonorrhœa, a "retropulsion," as the process was quaintly expressed by some of the earlier writers. It is pointed out that this conception is not inconsistent with modern ideas, and that "retropulsion" may be of more frequent occurrence than is generally imagined. Byers traces to Sir Benjamin Brodie (1818), the first accurately recorded cases of metastatic eye affections of gonorrhœal origin. He was followed by Vetch (1820), Abernethy (1825), Sir Astley Cooper (1830), and, especially, by Sir William Lawrence (1830). Lawrence gave the first clear description of the disease that is now known as gonorrhœal iritis. Ricord more than any other foreign worker did more to define the characters of eye affections of gonorrhœal origin and to differentiate them from contagious gonorrhœal ophthalmia.

An interesting chapter of Dr. Byers's work deals with general considerations on constitutional gonorrhœa—pathological, clinical, and therapeutical. In the great majority of instances gonorrhœa remains a purely local affection, but in a small percentage it gains entrance to the general circulation, where it may produce arthropathies, ocular lesions, or, much more rarely, definite septicæmia. Such cases occur most commonly in males, and in cases in which the posterior urethra and the contiguous structures are involved. The conditions that favour the entrance of the gonococcus into the system are not exactly known, although personal predilection undoubtedly plays a part. It is possible that certain strains of gonococci are more virulent than others, since cases are known where several individuals, contaminated from the same source, have all developed systemic manifestations. In this connection Ahmann's experiment is suggestive. He inoculated the urethra of a healthy subject with gonococci from the blood of a man suffering from generalized gonorrhœal infection, with the consequence that not only did urethritis develop, but also septicæmia, with secondary deposits in the synovial sheaths and in the lung. Laceration of the urethra by instruments, as sounds and catheters, has been thought to favour generalisation of the gonococcus. Accumulated pathological experience appears to show that the gonococcus itself is the cause of the metastases. As bacteriological *technique* improves, the *rôle* of mixed and secondary infections becomes less and less important. The existence of a gonotoxin has been placed beyond question by the work of many investigators, but

we are still in the dark as to the potentialities of this poison. The clinical manifestations of gonorrhœal affections of the eye are characterised by the uncertainty and irregularity which the inflammation shows with regard to the time of its occurrence, the extent to which it involves the tissues, the severity of the symptoms, together with the course and behaviour of the last-named. Dr. Byers protests against the old assumption, namely, that in gonorrhœa some articular affection must always precede the development of the eye trouble. In the course of his study he shows conclusively that the eye is often the first part of the body to manifest evidences of a general infection. Our author believes that the medical profession has not hitherto accorded to the metastatic gonorrhœal lesions of the eye that measure of consideration which they deserve. Such patients, as he insists, carry with them the seeds of grave and even fatal disorders. They should, accordingly, be confined to bed, and be treated as though they were actually suffering from an infective disorder.

The ground having been cleared by these general considerations on systemic gonorrhœa, Dr. Byers passes on to consider systematically the ocular manifestations of constitutional gonorrhœa, which he arranges as follows: affections of the conjunctiva, cornea, sclera, uveal tract, optic nerve and retina, together with Tenonitis and dacryoadenitis. As regards metastatic conjunctivitis, the author has met with five instances amongst a material of about 10,000 patients, *i.e.*, one in every eighteen hundred cases. It is therefore a condition of comparative rarity only. There is no reason why metastatic conjunctivitis should not occur at any moment while the gonococcus is circulating in the blood. It may, indeed, be the sole evidence of constitutional infection. In a series of 50 cases it occurred as the initial sign of gonorrhœal infection 18 times: simultaneouly with the infection 11 times; was followed by inflammatory phenomena 11 times; and, finally, was the only expression of systemic gonorrhœa 10 times. It attacks males much more commonly than females. Its greatest incidence coincides with the period of greatest sexual activity, *i.e.*, from 20 to 30 years of age. The disease is almost always bilateral. Its clinical picture differs little if at all from that of any catarrhal inflammation of the conjunctiva. The average duration of twenty-nine cases was, roughly, two weeks. It must be diagnosed from acute catarrhal conjunctivitis, on the one hand, and contagious gonorrhœal ophthalmia, on the other. Prognosis is good, although tempered by the fact it may be complicated by inflammations in other parts of the eye. Mild treatment, as by boric acid or biborate of soda drops, with weak silver nitrate where secretion is excessive, will suffice to cure.

Much interest centres around metastatic affections of the cornea in the course of constitutional gonorrhœa, conditions which have not yet been described in a general way. Dr.

Byers now attempts a characterisation of this interesting group of cases, of which literature includes reports of some twenty-eight. An abstract is given of each of these several cases, to which the author adds two that have fallen under his personal notice. An analysis appears to show that the keratitis may be: (a) metastatic in origin, or (b) due to secondary contamination from the conjunctival sac.

It is impossible to state accurately in figures the part played by systemic gonorrhœa in the production of inflammations of the uveal tract of the eye. The percentage probably differs according to the social and hygienic conditions of the places from which statistics have been collected. That the male is much more liable to suffer than the female is shown by the fact that of 109 cases analysed by Dr. Byers, 105 were in the former, and 4 only in the latter sex. The disease was symmetrical in over one-third of the 76 cases, in which the eyes were involved for the first time, and in one-sixth of the 19 cases in which the eyes were attacked in the second or subsequent occasions. In a series of 81 cases, the ocular preceded other manifestations in ten, appeared at the same time as other manifestations in nine, and followed other manifestations in 62 cases. Mild, severe, plastic, exudative, hæmorrhagic, suppurative, and recurrent or relapsing types of inflammation may be recognised.

The belief is probably justified that systemic gonorrhœa may sometimes give rise to metastatic inflammations of the optic nerve and retina. Fourteen such cases have been placed on record. As cause of the affections, recent experimental evidence appears to point in the direction of a local toxic action inseparably connected with the presence of the gonococcus in the diseased tissues. The ophthalmoscopic appearances, with a single exception, were those of a neuro-retinitis. Prognosis must be guarded, although, broadly speaking, the outlook is good.

One case alone of Tenonitis, namely, that reported by Peuch, is the only one supposed to be due to gonorrhœal metastasis. On the other hand, inflammation of the lacrymal gland (dacryoadenitis) has been put down to gonorrhœal metastasis in 17 cases. The diagnosis is readily made. In 14 of the reported cases the dacryoadenitis was bilateral. With one exception, the patients were males, whose ages ranged from 20 to 57 years of age. In a series of 13 cases (where the fact was noted), resolution took place in 11 instances, and suppuration in two. The average duration of 12 cases was about 19 days. Treatment should include attention to the underlying cause, hot fomentations, and, in the event of suppuration, drainage into the conjunctival sac. Cases of inflammation due to constitutional gonorrhœa, then, are generally bilateral and end in resolution, thereby contrasting with inflammation of the gland due to

direct extension along the lacrymal ducts from the conjunctiva, which are usually unilateral and go on to suppuration.

SYDNEY STEPHENSON.

NOTES AND ECHOES.

Deaths.

WE regret to announce the death on April 3rd last, after a brief and rapid illness, of Dr. W. H. de Silva, surgeon-in-charge of the Ceylon Eye Hospital and lecturer in ophthalmology in the Ceylon Medical College. The cause of death is stated to have been choleraic diarrhœa, ascribed to some cajunuts eaten at dessert. de Silva was just forty years of age at his death. He was a descendant of an old house, a branch of the historic Lindamullage clan, which has contributed great warriors to the Cingalese nation. de Silva was educated at the Prince of Wales' College in Moratuwa and at St. Thomas's College, Colombo. In 1887 he joined the Ceylon Medical College, and two years later went to Europe, and completed his medical course at Mareschal College, Aberdeen. His special education was received at the Royal Eye Hospital, London, and with Galezowski in Paris. de Silva had many interests in life, being a member of the Municipal Council, a lieutenant in the Volunteers, a director of the Y.M.C.A., and a member of the Council of the Royal Asiatic Society in Ceylon. His chief monument, however, is to be found in the Eye Hospital, a memorial to Queen Victoria, in the building of which de Silva took a large and honourable part. The deceased, who leaves a widow and four children, had inherited considerable wealth in estates planted in cocoanut, cinnamon, rubber, and cocoa.

Dr. Alois Schapringer, of New York, is dead in his sixtieth year. The deceased studied in Vienna, and practised as an ophthalmic surgeon for many years in New York. His literary contributions were numerous. The death is announced of Dr. M. Fouchard, once *chef-de-clinique* to Fano, in Paris. His thesis on "Glioma of the Retina" gained for him the laureateship of the Faculty of Medicine. Dr. Fouchard held several appointments, including that of oculist to the Western Railway of France Dr. George J. Holmes, an ophthalmic and aural surgeon of New Britain, Connecticut, U.S.A., has succumbed at the age of 53 years to pneumonia. The deaths are also announced of Dr. Joseph R. Waln, of Peoria, Illinois, of Dr. James W. Dalby, professor of ophthalmology in the University of Iowa, U.S.A., and of Dr. R. F. Burleigh, of Quincy, Mass. Lastly, Dr. Bouvin, the friend and pupil of Snellen, has died at La Hague, Holland.

* * * *

Honour to a British ophthalmologist.

HIS Majesty the King of Italy has been pleased to confer upon Dr. Thomas Reid, of Glasgow, N.B., the Order "Commendatore of the Crown of Italy." This honour, which was recommended for bestowal by the University of Turin, is intended as a recognition of the high merit of Dr. Reid's contributions both at home and in the *clinique* of ophthalmology in the University of Turin We cordially congratulate Dr. Reid upon the well-merited distinction.

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Appointments.

THE following gentlemen have been appointed examiners in ophthalmology for the ensuing year by the Royal College of Surgeons of Ireland:—A. H. Benson and H. H. B. Cunningham. Professor Eversbusch, director of the Munich *Augenklinik*, has been named *Geheimrat-Hofrat*. Dr. Majewski has been accorded the title of Professor of Ophthalmology in Cracow, Austria. The following appointments to the Paris Hospitals date as from the 15th of May last:—Hôtel-Dieu.—Surgeon, de Lapersonne; assistant, Joseph; chef de clinique, Landolt; chef de clinique. Monthus, Cantonnet, Hôpital Saint-Antoine. — Ophthalmologist, Dupuy-Dutemps; externe, Potiron. Hôpital Beaujon. — Ophthalmologist, Poulard; externe, Perochon. Hôpital Lariboisière.—Opthalmologist, Morax. Hôpital Laennec.—Ophthalmologist, Rochon-Duvigneaud; assistant, Onfray; adjoint, Caillaud. Hôpital des Enfants-Malades.—Ophthalmologist, Terrien; assistant, Hubert; adjoint, Chambey. W. M. de Vries has settled as *privat-dozent* in Amsterdam, R. Seefelder in Leipsig, Th. Wernecke in Odessa, and R. Scholtz in Budapest. Dr. H. H. Hansell has been elected president and Dr. E. Shumway, clerk, of the section of ophthalmology of the College of Physicians, Philadelphia, U.S.A. Dr. S. D. Risley has been elected chairman, Dr. W. C. Posey, vice-chairman, and Dr. B. Chance, secretary, of the Wills Hospital Ophthalmic Society, Philadelphia, Pa., U.S.A. Dr. Karl Wessely, assistant physician at the Würzburg Frauenklinik, has been appointed *privat-dozent* of ophthalmology in the University of Würzburg. Dr. Wessely's name is well-known for his researches respecting the action of subconjunctival injections.

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A new ophthalmological journal.

A NEW Spanish monthly journal of ophthalmology, the *Hojas mensuales de Oftalmologie*, has appeared at Tortosa under the editorship of Dr. Oliveres. We wish it much success.

* * * *

Honour to Professor Credé.

A BUST of Credé, the celebrated gynæcologist, who died on March 14th, 1892, has recently been unveiled in the Leipsig Universitäts-Frauenklinik. For the long period of thirty-two years Credé was professor of obstetrics and gynæcology in the University of Leipsig and director of the Maternity Hospital connected with the University. To eye surgeons Credé is best-known in connection with his preventive treatment of ophthalmia neonatorum, before his work a veritable scourge in continental maternities.

* * * *

Professor Hirschberg.

AS is well-known, Professor Hirschberg possesses one of the most complete libraries of ophthalmological books, MS., etc., in the world. We learn that he has bequeathed the unique collection to the Berlin Royal Library, and has further made provision for a liberal endowment, amounting, so it is said, to nearly £1,000. The interest on the capital sum is to be applied to obtaining periodicals on ophthalmology and optics.

* * * *

A Pickwickian Review.

WE have commented previously in these columns on the partial nature of some of the reviews published from time to time in the columns of medical periodicals. It is seldom, however, that so pretty a quarrel has been produced as that which has resulted from a review of Lieut.-Col. Maynard's *Manual of Ophthalmic Operations* in a recent number of the *Lancet* (April 25th, 1908). In the course of his remarks the anonymous writer of the notice takes occasion to say: "We notice that Worth's advancement operation is chosen for description. If we had not found this to be the rule in recent publications we should not have considered it necessary to comment upon it. How many of the authors really adopt this method? In our opiuion it is founded on a fallacy and practical experience shows that it possesses notable disadvantages." These somewhat gratuitous remarks naturally called forth a vigorous protest from Mr. Claud Worth which was published in the next issue (May 1st, 1908) of our contemporary. "I do not for a moment suggest," writes Mr. Worth, "that your reviewer was actuated by personal motives when he went out of his way to make this remarkable statement. But I do respectfully suggest that such a statement should not have been made anonymously or without giving reasons." We should not be altogether surprised if some of the other statements made by the reviewer raised a storm in certain quarters. For example, he brands Col. Herbert's account of his new operation for glaucoma as "almost unintelligible," although the description was specially contributed by Herbert himself to Maynard's

Manual. He further expresses the opinion that neither Herbert's operation nor that introduced by Professor Lagrange "is yet of proved utility." Lastly, he characterises Axenfeld's retractor for extirpation of the lacrymal sac as "a clumsy instrument which is best dispensed with altogether." Altogether, a very pretty kettle of fish! The point of the whole thing is that the reviewer's strictures have nothing whatever to do with Maynard's *Manual*.

* * * *

London County Council (Education Authority).

As readers are aware, the London County Council has more or less adequate machinery for detecting scholars attending their schools whose eyesight is defective, and none whatever either for correcting errors of refraction or for providing spectacles when such are needed. They might well take a hint from the Committee on Elementary Education of New York, which has recently reported on the subject. The Committee advises that centres should be properly equipped for the examination of children whose eyesight is defective, and that a staff of thirty ophthalmic surgeons should be appointed by the Department of Health to deal with such cases. Other recommendations include the provision of spectacles, and the appointment of an advisory body of five members.

* * * *

Pan-American Medical Congress.

THE fifth Pan-American Medical Congress will be held in Guatemala City, Guatemala, August 5th-10th, 1908. The two following subjects will be discussed in the section of ophthalmology:—1. What is the best method that we have at present of treating pigmentary retinitis? 2. Discussion on trachoma. The names of gentlemen desiring to take part in the discussions or to present papers can be sent to Dr. Azurdia, General Secretary, Guatemala, or to Dr. Ramon Guiteras, American Secretary, 75, West 55th Street, New York.

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"Daily Telegraph" Cup.

PRIVATE C. W. WIRGMAN, of the London Scottish, who won a first prize in the competition for the *Daily Telegraph* Cup, is a medical man in practice as an ophthalmic surgeon.

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The Apotheosis of the Spectacle Maker.

WHEN Charles I granted a royal charter to the Worshipful Company of Spectacle-makers in 1629, that body represented a well-defined craft. As a matter of fact, the science of ophthalmology, more especially that part dealing with errors of

refraction, was as yet unborn. By degrees an accurate knowledge of visual optics and of the physiology and pathology of the complex structures and phenomena concerned, has been gradually evolved by the labours of medical men. There is probably no branch of medicine which more nearly approaches the level of an exact science than that of the ophthalmic surgeon, and no study that demands greater special aptitude and assiduous study. Yet the spectaclemakers have claimed the right to follow on the heels of the scientific ophthalmologist, and to be experts not only in the making of good spectacles, but also in the many abstruse fields of study with which the ophthalmic surgeon must be familiar. From a recently-published syllabus, it may be gathered that the Company hold three examinations. The first is a preliminary devoted to mathematics (including trigonometry), and to general optics, including the use of the ophthalmoscope, perimeter, chromometer, making of lenses—in short, a general survey of ophthalmic practice. In the final examinations the candidate has to show a knowledge of various instruments, such as the microscope and barometer, and a number of scientific points necessary to the scientific understanding of the human eye, which we should have thought absolutely unnecessary for the man who is to make our lenses and fit our frames. The Worshipful Company, however, is not content until it has imposed a high standard test which would strain the capabilities of many a well-trained medical man to satisfy, even after a long course of special study and experience. The subjects set forth are: "Static and dynamic refraction of the eye. Accommodation and convergence. The movements of the eyeball and muscles employed. The near and far points. The range and amplitude of accommodation and convergence. The course of light through the media of the eye alone and modified by spherical and cylindrical lenses and prisms. Emmetropia, hypermetropia, myopia, astigmatism, anisometropia, aphakia, presbyopia, asthenopia, amblyopia, orthophoria, heterophoria, strabismus, diplopia, the fields of vision and fixation, stereoscopy. Chromatism of the eyes—tests for the same—colour vision and blindness." We venture to assume that any spectaclemaker who mastered the foregoing—supposing that were possible for a man without careful medical training—would have little time to devote to his lenses. It would be no less absurd to demand of the ophthalmic surgeon a knowledge of the theory and practice of making spectacles. One of the most curious features of the whole farce is the presence of a member of the Ophthalmological Society upon the board of examiners. If the Society be content, who can differ?—*Medical Press and Circular*, May 13th, 1908.

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Philadelphia College of Physicians.

THE Section of Ophthalmology of the College of Physicians of Philadelphia tendered a reception to Mr. E. Treacher Collins, of London, on May 25th last.

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Mr. T. H. Bickerton.

CONGRATULATIONS to Mr. T. H. Bickerton ophthalmic surgeon to the Liverpool Royal Infirmary, who has been placed by the Chancellor upon the Commission of the Peace for the City of Liverpool.

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Société française d'Ophtalmologie.

THE jubilee of the French Ophthalmological Society was celebrated with great *éclat* in Paris on May 3rd last. At 10 a.m. a reception of the foreign delegates took place in the amphitheatre of the Faculty of Medicine, a function at which M. Bayet, *directeur de l'enseignement supérieur* at the Ministry of Public Instruction, presided. Professor Landouzy, the *doyen* of the Faculty of Medicine of Paris, occupied a seat beside M. Bayet. Official discourses were by M. de Lapersonne, Dr. Galliard (*Société médicale des Hôpitaux*), Dr. Luc (*Société de Laryngologie*), and Dr. Rochon-Duvigneaud (*Société de Neurologie*). Foreign ophthalmological societies were officially represented by W. H. H. Jessop and G. A. Berry (Great Britain), Hess (Germany), v. Duyse (Belgium), Verdereau (Spain), Angelucci (Italy), Briend (Egypt), and Beauvois (Mexico). A visit followed to the halls of the *Faculté de Médecine* where the famous Louis XV. tapestry excited the wonder and admiration of the foreign visitors. The afternoon was spent at St.-Germain-en-Laye, where M. Albert Terson gave an interesting demonstration of Gallo-Roman eye instruments, eye-stones, and ointment jars. In the evening a banquet was held at the Pavillon Henri IV. It was well attended. On the following day serious business began with the discussion on Terson's report (see page 467 of the present number) dealing with the treatment of injuries of the eye. The discussion occupied a couple of hours. The 5th, 6th, and the 7th of May were occupied by the reading of numerous communications.

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Franco-British Exhibition.

READERS may be interested to know that an exhibit by Mr. A. W. Head, F.Z.S., the well-known ophthalmological artist, may be found in the Biological Section (room No. 11) of the White City at Shepherd's Bush. Mr. Head has on view 250 original drawings of the eyes of mammals and reptiles, made some years ago on behalf of Mr. G. L. Johnson.

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University of Oxford: Department of Ophthalmology.

A CONGRESS of surgeons interested in ophthalmology has for the last two years been held at the conclusion of the post-graduate course of ophthalmology given in the University of Oxford. Last year nearly one hundred gentlemen availed themselves of the invitation to be present. The Reader in ophthalmology, Mr. Robert W. Doyne, has decided to issue a similar invitation this year for Thursday, July 16th, and Friday, July 17th. It is the particular wish of the authorities that the Oxford gathering may in no way interfere with the meeting of the British Medical Association to be held later in the month of July at Sheffield, under the Presidency of Mr. Simeon Snell. Indeed, the Reader has endeavoured to arrange that the Oxford meeting shall to some extent be preliminary and preparatory to the Sheffield one. To this end, Sir A. Wright will give at Oxford an address on vaccine therapy, but will not touch upon sero-therapy, one of the subjects officially chosen for discussion at Sheffield. Again, at Sheffield another official discussion will be on the relationship between diseases of the accessory sinuses and those of the eye and orbit. At Oxford, on the other hand, Mr. A. P. Parker has arranged to give an anatomical display of dissections of the accessory sinuses Lastly, at Sheffield colour-vision and its anomalies will be discussed, while at Oxford experimental demonstrations of the various theories of colour-vision will be given. The Oxford programme includes, furthermore, the following items:—A demonstration of the Calmette re-action (Mr. P. Adams); Lantern demonstration of retinal disease, with massive exudation (Mr. George Coats); Address on congenital cataract (Mr. E. Treacher Collins); an address by Professor Gotch; Demonstration of some steps in the evolution of the ciliary body and the suspensory ligament (Mr. Gradon); Demonstrations on the theories of colour-vision (Dr. Edridge-Green and others); The surgical treatment of optic neuritis (Sir Victor Horsley); Demonstration of points in connection with glaucoma (Mr. Priestley Smith); Exhibition of a reconstruction model of the eye of a human embryo of 13mm. in length (Professor Arthur Thomson); A series of microscopical specimens to illustrate certain points in the histology of the fœtal eye (Mr. Sydney Stephenson).

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UNIVERSITY OF OXFORD.

DEPARTMENT OF OPHTHALMOLOGY.

The Fifth Annual Course on Ophthalmology has been arranged from July 6th to 18th. The main idea of the Course is to demonstrate (on actual patients as far as possible) the whole range of Ophthalmology, in order to make the reading of a text book more profitable than can be the case when relying merely on pictures.

The first part will be mainly devoted to demonstrating the practical examination of eye patients, the use of the Ophthalmoscope, and the work of refraction. During the second part the work will be more specialised.

As well as the mere routine cases, there will be a large selection of patients of unusual interest for the benefit of those who are more experienced in eye work. Altogether some 500 cases will be present for demonstration.

SYLLABUS.

PART I.

MONDAY, JULY 6th.

10—11	Clinical lecture on the External Examination of the Eye, and Visual Acuity; by the Reader.
11.30—1	Practical demonstration of the above; by the Hospital Staff.
2—3	Clinical lecture at the Radcliffe Infirmary; by Professor Osler.
3—5	Practical instruction at the Eye Hospital; by the Hospital Staff.
8.30	Clinical lecture on the methods of using the Ophthalmoscope; by Mr. P. Adams.

TUESDAY, JULY 7th.

10—11	Lecture on Refraction; by Mr. P. Adams.
11—1	Practical demonstration of the methods of estimating Refraction; by the Hospital Staff.
2—3	Clinical lecture at the Radcliffe Infirmary; by Professor Osler.
3—5	Practical instruction at the Eye Hospital; by the Hospital Staff.
8.30	Practical instruction on the Ophthalmoscope; by the Reader.

WEDNESDAY, JULY 8th.

10—11	Clinical lecture on the Field of Vision; by Mr. P. Adams.
11—12	Practical demonstration of the Field of Vision; by the Hospital Staff.
12—1	Practical instruction at the Hospital; by the Hospital Staff.
2—5.30	Practical instruction at the Hospital; by the Hospital Staff.
8.30	Lecture on functional troubles; by the Reader.

THURSDAY, JULY 9th.

10—1	Practical instruction at the Hospital; by the Hospital Staff.
2—5	Practical instruction at the Hospital; by the Hospital Staff.
8.30	Demonstration of Microscopic Appearances; by Dr. Moorson-Wood.

PART II.

FRIDAY, JULY 10th.

10—11.15	Lecture on the Conjunctiva; by Mr. Ormond.
11.30—12.45	Lecture on the Cornea; by Mr. Ormond.
2—3	Clinical lecture at the Radcliffe Infirmary; by Professor Osler.
3—5	Practical instruction at the Hospital; by the Hospital Staff.
8.30	Lecture on Congenital Anomalies; by Mr. Sydney Stephenson.

SATURDAY, JULY 11th.

10—11.15	Ocular Therapeutics; by Mr. Sydney Stephenson.
11.30—1	Lecture on the Lens; by the Reader.
2—5	Practical instruction at the Hospital; by the Hospital Staff.

MONDAY, JULY 13th.

10—11.15	Lecture on the Choroid; by Mr. Holmes Spicer.
11.30—12.45	Lecture on the Retina and Optic Nerve; by Mr. Holmes Spicer.
2—5	Practical instruction at the Hospital; by the Hospital Staff.
8.30	Lecture on the Iris and Ciliary Body; by Mr. Arnold Lawson.

TUESDAY, JULY 14th.

10—11.15	Lecture on Glaucoma; by Mr. Arnold Lawson.
11.30—12.45	Medical aspect of Ophthalmology; by Dr. James Taylor
2—5	Practical instruction Thereon; by Dr. James Taylor.
8.30	Lecture on the Orbit and Lacrymal apparatus; by Mr. P. Adams.

WEDNESDAY, JULY 15th.

10—11	Clinical lecture at the Radcliffe Infirmary; by Professor Osler.
12—1	Practical instruction at the Hospital; by the Hospital Staff.
2—5	Practical instruction at the Hospital; by the Hospital Staff.

THURSDAY, JULY 16th, and FRIDAY, JULY 17th.
Addresses, Special demonstrations and the examination of interesting and unusual cases.

The Course will be illustrated by the lantern Fee for the Course, £3 3s. Gentlemen attending the Course will be provided with Board and Residence at Keble College at the rate of 7s. 6d. a day during the second week but during the first week lodgings must be secured.

For further particulars apply to ROBERT W. DOYNE, M.A., Margaret Ogilvie's Reader in Ophthalmology in the University of Oxford, 30, Cavendish Square, London, W.